

SUBCHAPTER I

USE AND MANAGEMENT OF CONTAINERS

§11-264-170 Applicability. The rules in this subchapter apply to owners and operators of all hazardous waste facilities that store containers of hazardous waste, except as section 11-264-1 provides otherwise. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.170)

§11-264-171 Condition of containers. If a container holding hazardous waste is not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak, the owner or operator must transfer the hazardous waste from this container to a container that is in good condition or manage the waste in some other way that complies with the requirements of this chapter. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.171)

§11-264-172 Compatibility of waste with containers. The owner or operator must use a container made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.172)

§11-264-173 Management of containers. (a) A container holding hazardous waste must always be closed during storage, except when it is necessary to add or remove waste.

(b) A container holding hazardous waste must not be opened, handled, or stored in a manner which may rupture the container or cause it to leak. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.173)

§11-264-174 Inspections. At least weekly, the owner or operator must inspect areas where containers are stored, looking for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.174)

§11-264-175 Containment. (a) Container storage areas must have a containment system that is designed and operated in

accordance with subsection (b), except as otherwise provided by subsection (c).

(b) A containment system must be designed and operated as follows:

- (1) A base must underly the containers which is free of cracks or gaps and is sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed;
- (2) The base must be sloped or the containment system must be otherwise designed and operated to drain and remove liquids resulting from leaks, spills, or precipitation, unless the containers are elevated or are otherwise protected from contact with accumulated liquids;
- (3) The containment system must have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container, whichever is greater. Containers that do not contain free liquids need not be considered in this determination;
- (4) Run-on into the containment system must be prevented unless the collection system has sufficient excess capacity in addition to that required in paragraph (b)(3) to contain any run-on which might enter the system; and
- (5) Spilled or leaked waste and accumulated precipitation must be removed from the sump or collection area in as timely a manner as is necessary to prevent overflow of the collection system.

(c) Storage areas that store containers holding only wastes that do not contain free liquids need not have a containment system defined by subsection (b), except as provided by subsection (d) or provided that:

- (1) The storage area is sloped or is otherwise designed and operated to drain and remove liquid resulting from precipitation, or
- (2) The containers are elevated or are otherwise protected from contact with accumulated liquid.

(d) Storage areas that store containers holding the wastes listed below that do not contain free liquids must have a containment system defined by subsection (b):

- (1) F020, F021, F022, F023, F026, and F027.
- (2) [Reserved] [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.175)

§11-264-176 Special requirements for ignitable or reactive waste. Containers holding ignitable or reactive waste must be located at least fifteen meters (fifty feet) from the facility's property line. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.176)

§11-264-177

§11-264-177 Special requirements for incompatible wastes.

(a) Incompatible wastes, or incompatible wastes and materials (see Appendix V for examples), must not be placed in the same container, unless subsection 11-264-17(b) is complied with.

(b) Hazardous waste must not be placed in an unwashed container that previously held an incompatible waste or material.

(c) A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.177)

§11-264-178 Closure. At closure, all hazardous waste and hazardous waste residues must be removed from the containment system. Remaining containers, liners, bases, and soil containing or contaminated with hazardous waste or hazardous waste residues must be decontaminated or removed. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.178)

§11-264-179 Air emission standards. The owner or operator shall manage all hazardous waste placed in a container in accordance with the applicable requirements of subchapters AA, BB, and CC. [Eff 3/13/99; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.179)

SUBCHAPTER J

TANK SYSTEMS

§11-264-190 Applicability. The requirements of this subchapter apply to owners and operators of facilities that use tank systems for storing or treating hazardous waste except as otherwise provided in subsections (a), (b) and (c) or in section 11-264-1.

(a) Tank systems that are used to store or treat hazardous waste which contains no free liquids and are situated inside a building with an impermeable floor are exempted from the requirements in section 11-264-193. To demonstrate the absence or presence of free liquids in the stored/treated waste, the following test must be used: Method 9095 (Paint Filter Liquids Test) as described in ``Test Methods for Evaluating Solid Waste,

Physical/Chemical Methods,' ' EPA Publication SW-846, as incorporated by reference in section 11-260-11.

- (b) Tank systems, including sumps, as defined in section 11-260-10, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes are exempted from the requirements in subsection 11-264-193(a).
- (c) Tanks, sumps, and other such collection devices or systems used in conjunction with drip pads, as defined in section 11-260-10 and regulated under subchapter W of this chapter, must meet the requirements of this subchapter. [Eff 6/18/94; am 3/13/99; comp
(Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.190)]

§11-264-191 Assessment of existing tank system's integrity.

(a) For each existing tank system that does not have secondary containment meeting the requirements of section 11-264-193, the owner or operator must determine that the tank system is not leaking or is unfit for use. Except as provided in subsection (c), the owner or operator must obtain and keep on file at the facility a written assessment reviewed and certified by an independent, qualified registered professional engineer, in accordance with subsection 11-270-11(d), that attests to the tank system's integrity by the effective date of these rules.

(b) This assessment must determine that the tank system is adequately designed and has sufficient structural strength and compatibility with the waste(s) to be stored or treated, to ensure that it will not collapse, rupture, or fail. At a minimum, this assessment must consider the following:

- (1) Design standard(s), if available, according to which the tank and ancillary equipment were constructed;
- (2) Hazardous characteristics of the waste(s) that have been and will be handled;
- (3) Existing corrosion protection measures;
- (4) Documented age of the tank system, if available (otherwise, an estimate of the age); and
- (5) Results of a leak test, internal inspection, or other tank integrity examination such that:
 - (i) For non-enterable underground tanks, the assessment must include a leak test that is capable of taking into account the effects of temperature variations, tank end deflection, vapor pockets, and high water table effects, and
 - (ii) For other than non-enterable underground tanks and for ancillary equipment, this assessment must include either a leak test, as described above, or other integrity examination, that is certified by an independent, qualified, registered professional

engineer in accordance with subsection 11-270-11(d), that addresses cracks, leaks, corrosion, and erosion.

(c) Tank systems that store or treat materials that become hazardous wastes on the effective date of these rules must conduct this assessment by the effective date of these rules. Tank systems that store or treat materials that become hazardous wastes subsequent to the effective date of these rules must conduct this assessment within twelve months after the date that the waste becomes a hazardous waste.

(d) If, as a result of the assessment conducted in accordance with subsection (a), a tank system is found to be leaking or unfit for use, the owner or operator must comply with the requirements of section 11-264-196. [Eff 6/18/94; comp
(Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35)
(Imp: 40 C.F.R. §264.191)]

§11-264-192 Design and installation of new tank systems or components. (a) Owners or operators of new tank systems or components must obtain and submit to the director, at time of submittal of Part B information, a written assessment, reviewed and certified by an independent, qualified registered professional engineer, in accordance with subsection 11-270-11(d), attesting that the tank system has sufficient structural integrity and is acceptable for the storing and treating of hazardous waste. The assessment must show that the foundation, structural support, seams, connections, and pressure controls (if applicable) are adequately designed and that the tank system has sufficient structural strength, compatibility with the waste(s) to be stored or treated, and corrosion protection to ensure that it will not collapse, rupture, or fail. This assessment, which will be used by the director to review and approve or disapprove the acceptability of the tank system design, must include, at a minimum, the following information:

- (1) Design standard(s) according to which tank(s) and/or the ancillary equipment are constructed;
- (2) Hazardous characteristics of the waste(s) to be handled;
- (3) For new tank systems or components in which the external shell of a metal tank or any external metal component of the tank system will be in contact with the soil or with water, a determination by a corrosion expert of:
 - (i) Factors affecting the potential for corrosion, including but not limited to:
 - (A) Soil moisture content;
 - (B) Soil pH;
 - (C) Soil sulfides level;
 - (D) Soil resistivity;

- (E) Structure to soil potential;
 - (F) Influence of nearby underground metal structures (e.g., piping);
 - (G) Existence of stray electric current;
 - (H) Existing corrosion-protection measures (e.g., coating, cathodic protection), and
 - (ii) The type and degree of external corrosion protection that are needed to ensure the integrity of the tank system during the use of the tank system or component, consisting of one or more of the following:
 - (A) Corrosion-resistant materials of construction such as special alloys, fiberglass reinforced plastic, etc.;
 - (B) Corrosion-resistant coating (such as epoxy, fiberglass, etc.) with cathodic protection (e.g., impressed current or sacrificial anodes); and
 - (C) Electrical isolation devices such as insulating joints, flanges, etc.
 - (4) For underground tank system components that are likely to be adversely affected by vehicular traffic, a determination of design or operational measures that will protect the tank system against potential damage; and
 - (5) Design considerations to ensure that:
 - (i) Tank foundations will maintain the load of a full tank;
 - (ii) Tank systems will be anchored to prevent flotation or dislodgment where the tank system is placed in a saturated zone, or is located within a seismic fault zone subject to the standards of subsection 11-264-18(a); and
 - (iii) Tank systems will withstand the effects of frost heave.
- (b) The owner or operator of a new tank system must ensure that proper handling procedures are adhered to in order to prevent damage to the system during installation. Prior to covering, enclosing, or placing a new tank system or component in use, an independent, qualified installation inspector or an independent, qualified, registered professional engineer, either of whom is trained and experienced in the proper installation of tank systems or components, must inspect the system for the presence of any of the following items:
- (1) Weld breaks;
 - (2) Punctures;
 - (3) Scrapes of protective coatings;
 - (4) Cracks;
 - (5) Corrosion;

- (6) Other structural damage or inadequate construction/installation.

All discrepancies must be remedied before the tank system is covered, enclosed, or placed in use.

(c) New tank systems or components that are placed underground and that are backfilled must be provided with a backfill material that is a noncorrosive, porous, homogeneous substance and that is installed so that the backfill is placed completely around the tank and compacted to ensure that the tank and piping are fully and uniformly supported.

(d) All new tanks and ancillary equipment must be tested for tightness prior to being covered, enclosed, or placed in use. If a tank system is found not to be tight, all repairs necessary to remedy the leak(s) in the system must be performed prior to the tank system being covered, enclosed, or placed into use.

(e) Ancillary equipment must be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction.

(f) The owner or operator must provide the type and degree of corrosion protection recommended by an independent corrosion expert, based on the information provided under paragraph (a)(3), or other corrosion protection if the director believes other corrosion protection is necessary to ensure the integrity of the tank system during use of the tank system. The installation of a corrosion protection system that is field fabricated must be supervised by an independent corrosion expert to ensure proper installation.

(g) The owner or operator must obtain and keep on file at the facility written statements by those persons required to certify the design of the tank system and supervise the installation of the tank system in accordance with the requirements of subsections (b) through (f), that attest that the tank system was properly designed and installed and that repairs, pursuant to subsections (b) and (d), were performed. These written statements must also include the certification statement as required in subsection 11-270-11(d). [Eff 6/18/94; comp

](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35)
(Imp: 40 C.F.R. §264.192)

§11-264-193 Containment and detection of releases. (a) In order to prevent the release of hazardous waste or hazardous constituents to the environment, secondary containment that meets the requirements of this section must be provided (except as provided in subsections (f) and (g)):

- (1) For all new tank systems or components, prior to their being put into service;
- (2) For all existing tank systems used to store or treat EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027, by the effective date of these rules;

- (3) For those existing tank systems of known and documented age, by the effective date of these rules or when the tank system has reached 15 years of age, whichever comes later;
- (4) For those existing tank systems for which the age cannot be documented, by January 12, 1995; but if the age of the facility is greater than seven years, secondary containment must be provided by the time the facility reaches 15 years of age, or by the effective date of these rules, whichever comes later;
- (5) For those existing tank systems of known and documented age that store or treat materials that become hazardous wastes subsequent to the effective date of these rules, within two years after the date that the material becomes a hazardous waste under RCRA, or by the effective date of these rules, or when the tank system has reached 15 years of age, whichever comes later; and
- (6) For those existing tank systems for which the age cannot be documented that store or treat materials that become hazardous wastes subsequent to the effective date of these rules, within eight years after the date that the material becomes a hazardous waste under RCRA, or by the effective date of these rules, whichever comes later; but if the age of the facility is greater than seven years, secondary containment must be provided by the time the facility reaches 15 years of age, or within two years after the date that the material becomes a hazardous waste under RCRA, or by the effective date of these rules, whichever comes later.
- (b) Secondary containment systems must be:
 - (1) Designed, installed, and operated to prevent any migration of wastes or accumulated liquid out of the system to the soil, ground water, or surface water at any time during the use of the tank system; and
 - (2) Capable of detecting and collecting releases and accumulated liquids until the collected material is removed.
- (c) To meet the requirements of subsection (b), secondary containment systems must be at a minimum:
 - (1) Constructed of or lined with materials that are compatible with the waste(s) to be placed in the tank system and must have sufficient strength and thickness to prevent failure owing to pressure gradients (including static head and external hydrological forces), physical contact with the waste to which it is exposed, climatic conditions, and the stress of daily operation (including stresses from nearby vehicular traffic).

- (2) Placed on a foundation or base capable of providing support to the secondary containment system, resistance to pressure gradients above and below the system, and capable of preventing failure due to settlement, compression, or uplift;
 - (3) Provided with a leak-detection system that is designed and operated so that it will detect the failure of either the primary or secondary containment structure or the presence of any release of hazardous waste or accumulated liquid in the secondary containment system within twenty-four hours, or at the earliest practicable time if the owner or operator can demonstrate to the director that existing detection technologies or site conditions will not allow detection of a release within twenty-four hours; and
 - (4) Sloped or otherwise designed or operated to drain and remove liquids resulting from leaks, spills, or precipitation. Spilled or leaked waste and accumulated precipitation must be removed from the secondary containment system within twenty-four hours, or in as timely a manner as is possible to prevent harm to human health and the environment, if the owner or operator can demonstrate to the director that removal of the released waste or accumulated precipitation cannot be accomplished within twenty-four hours.
- (d) Secondary containment for tanks must include one or more of the following devices:
- (1) A liner (external to the tank);
 - (2) A vault;
 - (3) A double-walled tank; or
 - (4) An equivalent device as approved by the director
- (e) In addition to the requirements of subsections (b), (c), and (d), secondary containment systems must satisfy the following requirements:
- (1) External liner systems must be:
 - (i) Designed or operated to contain one hundred percent of the capacity of the largest tank within its boundary;
 - (ii) Designed or operated to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run-on or infiltration. Such additional capacity must be sufficient to contain precipitation from a twenty-five year, twenty-four hour rainfall event.
 - (iii) Free of cracks or gaps; and
 - (iv) Designed and installed to surround the tank completely and to cover all surrounding earth likely to come into contact with the waste if the waste is released from the tank(s) (i.e., capable

of preventing lateral as well as vertical migration of the waste).

- (2) Vault systems must be:
 - (i) Designed or operated to contain one hundred percent of the capacity of the largest tank within its boundary;
 - (ii) Designed or operated to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run-on or infiltration. Such additional capacity must be sufficient to contain precipitation from a twenty-five year, twenty-four hour rainfall event;
 - (iii) Constructed with chemical-resistant water stops in place at all joints (if any);
 - (iv) Provided with an impermeable interior coating or lining that is compatible with the stored waste and that will prevent migration of waste into the concrete;
 - (v) Provided with a means to protect against the formation of and ignition of vapors within the vault, if the waste being stored or treated:
 - (A) Meets the definition of ignitable waste under section 11-262-21; or
 - (B) Meets the definition of reactive waste under section 11-262-21, and may form an ignitable or explosive vapor.
 - (vi) Provided with an exterior moisture barrier or be otherwise designed or operated to prevent migration of moisture into the vault if the vault is subject to hydraulic pressure.
- (3) Double-walled tanks must be:
 - (i) Designed as an integral structure (i.e., an inner tank completely enveloped within an outer shell) so that any release from the inner tank is contained by the outer shell.
 - (ii) Protected, if constructed of metal, from both corrosion of the primary tank interior and of the external surface of the outer shell: and
 - (iii) Provided with a built-in continuous leak detection system capable of detecting a release within twenty-four hours, or at the earliest practicable time, if the owner or operator can demonstrate to the director, and the director concludes, that the existing detection technology or site conditions would not allow detection of a release within twenty-four hours.
- (f) Ancillary equipment must be provided with secondary containment (e.g., trench, jacketing, double-walled piping) that meets the requirements of subsections (b) and (c) except for:

- (1) Aboveground piping (exclusive of flanges, joints, valves, and other connections) that are visually inspected for leaks on a daily basis;
- (2) Welded flanges, welded joints, and welded connections, that are visually inspected for leaks on a daily basis;
- (3) Sealless or magnetic coupling pumps and sealless valves, that are visually inspected for leaks on a daily basis; and
- (4) Pressurized aboveground piping systems with automatic shut-off devices (e.g., excess flow check valves, flow metering shutdown devices, loss of pressure actuated shut-off devices) that are visually inspected for leaks on a daily basis.

(g) The owner or operator may obtain a variance from the requirements of this section if the director finds, as a result of a demonstration by the owner or operator that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous waste or hazardous constituents into the ground water; or surface water at least as effectively as secondary containment during the active life of the tank system or that in the event of a release that does migrate to ground water or surface water, no substantial present or potential hazard will be posed to human health or the environment. New underground tank systems may not, per a demonstration in accordance with paragraph (g)(2), be exempted from the secondary containment requirements of this section.

- (1) In deciding whether to grant a variance based on a demonstration of equivalent protection of ground water and surface water, the director will consider:
 - (i) The nature and quantity of the wastes;
 - (ii) The proposed alternate design and operation;
 - (iii) The hydrogeologic setting of the facility, including the thickness of soils present between the tank system and ground water, and
 - (iv) All other factors that would influence the quality and mobility of the hazardous constituents and the potential for them to migrate to ground water or surface water
- (2) In deciding whether to grant a variance based on a demonstration of no substantial present or potential hazard, the director will consider:
 - (i) The potential adverse effects on ground water, surface water, and land quality taking into account:
 - (A) The physical and chemical characteristics of the waste in the tank system, including its potential for migration.
 - (B) The hydrogeological characteristics of the facility and surrounding land,

- (C) The potential for health risks caused by human exposure to waste constituents,
 - (D) The potential for damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents, and
 - (E) The persistence and permanence of the potential adverse effects;
 - (ii) The potential adverse effects of a release on ground-water quality, taking into account:
 - (A) The quantity and quality of ground water and the direction of ground-water flow,
 - (B) The proximity and withdrawal rates of ground-water users,
 - (C) The current and future uses of ground water in the area, and
 - (D) The existing quality of ground water, including other sources of contamination and their cumulative impact on the ground-water quality;
 - (iii) The potential adverse effects of a release on surface water quality, taking into account:
 - (A) The quantity and quality of ground water and the direction of ground-water flow,
 - (B) The patterns of rainfall in the region,
 - (C) The proximity of the tank system to surface waters,
 - (D) The current and future uses of surface waters in the area and any water quality standards established for those surface waters, and
 - (E) The existing quality of surface water, including other sources of contamination and the cumulative impact on surface-water quality; and
 - (iv) The potential adverse effects of a release on the land surrounding the tank system, taking into account:
 - (A) The patterns of rainfall in the region, and
 - (B) The current and future uses of the surrounding land.
- (3) The owner or operator of a tank system, for which a variance from secondary containment had been granted in accordance with the requirements of paragraph (g)(1), at which a release of hazardous waste has occurred from the primary tank system but has not migrated beyond the zone of engineering control (as established in the variance), must:
 - (i) Comply with the requirements of section 11-264-196, except subsection (d), and
 - (ii) Decontaminate or remove contaminated soil to the extent necessary to:

- (A) Enable the tank system for which the variance was granted to resume operation with the capability for the detection of releases at least equivalent to the capability it had prior to the release; and
- (B) Prevent the migration of hazardous waste or hazardous constituents to ground water or surface water; and
- (iii) If contaminated soil cannot be removed or decontaminated in accordance with paragraph (g)(3)(ii), comply with the requirement of subsection 11-264-197(b).
- (4) The owner or operator of a tank system, for which a variance from secondary containment had been granted in accordance with the requirements of paragraph (g)(1), at which a release of hazardous waste has occurred from the primary tank system and has migrated beyond the zone of engineering control (as established in the variance), must:
 - (i) Comply with the requirements of subsections 11-264-196 (a), (b), (c), and (d); and
 - (ii) Prevent the migration of hazardous waste or hazardous constituents to ground water or surface water, if possible, and decontaminate or remove contaminated soil. If contaminated soil cannot be decontaminated or removed or if ground water has been contaminated, the owner or operator must comply with the requirements of subsection 11-264-197(b); and
 - (iii) If repairing, replacing, or reinstalling the tank system, provide secondary containment in accordance with the requirements of subsections (a) through (f) or reapply for a variance from secondary containment and meet the requirements for new tank systems in section 11-264-192 if the tank system is replaced. The owner or operator must comply with these requirements even if contaminated soil can be decontaminated or removed and ground water or surface water has not been contaminated.
- (h) The following procedures must be followed in order to request a variance from secondary containment:
 - (1) The director must be notified in writing by the owner or operator that he intends to conduct and submit a demonstration for a variance from secondary containment as allowed in subsection (g) according to the following schedule:
 - (i) For existing tank systems, at least twenty-four months prior to the date that secondary

- containment must be provided in accordance with subsection (a).
- (ii) For new tank systems, at least thirty days prior to entering into a contract for installation.
 - (2) As part of the notification, the owner or operator must also submit to the director a description of the steps necessary to conduct the demonstration and a timetable for completing each of the steps. The demonstration must address each of the factors listed in paragraph (g)(1) or paragraph (g)(2);
 - (3) The demonstration for a variance must be completed within one-hundred and eighty days after notifying the director of an intent to conduct the demonstration; and
 - (4) If a variance is granted under this subsection, the director will require the permittee to construct and operate the tank system in the manner that was demonstrated to meet the requirements for the variance.
- (i) All tank systems, until such time as secondary containment that meets the requirements of this section is provided, must comply with the following:
- (1) For non-enterable underground tanks, a leak test that meets the requirements of paragraph 11-264-191(b)(5) or other tank integrity method, as approved or required by the director, must be conducted at least annually.
 - (2) For other than non-enterable underground tanks, the owner or operator must either conduct a leak test as in paragraph (i)(1) or develop a schedule and procedure for an assessment of the overall condition of the tank system by an independent, qualified registered professional engineer. The schedule and procedure must be adequate to detect obvious cracks, leaks, and corrosion or erosion that may lead to cracks and leaks. The owner or operator must remove the stored waste from the tank, if necessary, to allow the condition of all internal tank surfaces to be assessed. The frequency of these assessments must be based on the material of construction of the tank and its ancillary equipment, the age of the system, the type of corrosion or erosion protection used, the rate of corrosion or erosion observed during the previous inspection, and the characteristics of the waste being stored or treated.
 - (3) For ancillary equipment, a leak test or other integrity assessment as approved by the director must be conducted at least annually.
 - (4) The owner or operator must maintain on file at the facility a record of the results of the assessments conducted in accordance with paragraphs (i)(1) through (i)(3).
 - (5) If a tank system or component is found to be leaking or unfit for use as a result of the leak test or

assessment in paragraphs (i)(1) through (i)(3), the owner or operator must comply with the requirements of section 11-264-196. [Eff 6/18/94; comp]
(Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.193)

§11-264-194 General operating requirements. (a) Hazardous wastes or treatment reagents must not be placed in a tank system if they could cause the tank, its ancillary equipment, or the containment system to rupture, leak, corrode, or otherwise fail.

(b) The owner or operator must use appropriate controls and practices to prevent spills and overflows from tank or containment systems. These include at a minimum:

- (1) Spill prevention controls (e.g., check valves, dry disconnect couplings);
- (2) Overfill prevention controls (e.g., level sensing devices, high level alarms, automatic feed cutoff, or bypass to a standby tank); and
- (3) Maintenance of sufficient freeboard in uncovered tanks to prevent overtopping by wave or wind action or by precipitation.

(c) The owner or operator must comply with the requirements of section 11-264-196 if a leak or spill occurs in the tank system. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.194)

§11-264-195 Inspections. (a) The owner or operator must develop and follow a schedule and procedure for inspecting overfill controls.

(b) The owner or operator must inspect at least once each operating day:

- (1) Aboveground portions of the tank system, if any, to detect corrosion or releases of waste;
- (2) Data gathered from monitoring and leak detection equipment (e.g., pressure or temperature gauges, monitoring wells) to ensure that the tank system is being operated according to its design; and
- (3) The construction materials and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment system (e.g., dikes) to detect erosion or signs of releases of hazardous waste (e.g., wet spots, dead vegetation).

(c) The owner or operator must inspect cathodic protection systems, if present, according to, at a minimum, the following schedule to ensure that they are functioning properly:

- (1) The proper operation of the cathodic protection system must be confirmed within six months after initial installation and annually thereafter; and

- (2) All sources of impressed current must be inspected and/or tested, as appropriate, at least bimonthly (i.e., every other month).

(d) The owner or operator must document in the operating record of the facility an inspection of those items in subsections (a) through (c). [Eff 6/18/94; comp]
(Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.195)

§11-264-196 Response to leaks or spills and disposition of leaking or unfit-for-use tank systems. A tank system or secondary containment system from which there has been a leak or spill, or which is unfit for use, must be removed from service immediately, and the owner or operator must satisfy the following requirements:

(a) Cessation of use; prevent flow or addition of wastes. The owner or operator must immediately stop the flow of hazardous waste into the tank system or secondary containment system and inspect the system to determine the cause of the release.

(b) Removal of waste from tank system or secondary containment system.

- (1) If the release was from the tank system, the owner/operator must, within twenty-four hours after detection of the leak or, if the owner/operator demonstrates that it is not possible, at the earliest practicable time, remove as much of the waste as is necessary to prevent further release of hazardous waste to the environment and to allow inspection and repair of the tank system to be performed.

- (2) If the material released was to a secondary containment system, all released materials must be removed within twenty-four hours or in as timely a manner as is possible to prevent harm to human health and the environment.

(c) Containment of visible releases to the environment. The owner/operator must immediately conduct a visual inspection of the release and, based upon that inspection:

- (1) Prevent further migration of the leak or spill to soils or surface water; and
- (2) Remove, and properly dispose of, any visible contamination of the soil or surface water.

(d) Notifications, reports.

- (1) Any release to the environment, except as provided in paragraph (d)(2), must be reported to the director within twenty-four hours of its detection. If the release has been reported pursuant to 40 CFR Part 302, that report will satisfy this requirement.
- (2) A leak or spill of hazardous waste is exempted from the requirements of this subsection if it is:

- (i) Less than or equal to a quantity of one (1) pound, and
 - (ii) Immediately contained and cleaned up.
- (3) Within thirty days of detection of a release to the environment, a report containing the following information must be submitted to the director:
 - (i) Likely route of migration of the release;
 - (ii) Characteristics of the surrounding soil (soil composition, geology, hydrogeology, climate);
 - (iii) Results of any monitoring or sampling conducted in connection with the release (if available). If sampling or monitoring data relating to the release are not available within thirty days, these data must be submitted to the director as soon as they become available.
 - (iv) Proximity to down-gradient drinking water, surface water, and populated areas; and
 - (v) Description of response actions taken or planned.
- (e) Provision of secondary containment, repair, or closure.
- (1) Unless the owner/operator satisfies the requirements of paragraphs (e)(2) through (4), the tank system must be closed in accordance with section 11-264-197.
- (2) If the cause of the release was a spill that has not damaged the integrity of the system, the owner/operator may return the system to service as soon as the released waste is removed and repairs, if necessary, are made.
- (3) If the cause of the release was a leak from the primary tank system into the secondary containment system, the system must be repaired prior to returning the tank system to service.
- (4) If the source of the release was a leak to the environment from a component of a tank system without secondary containment, the owner/operator must provide the component of the system from which the leak occurred with secondary containment that satisfies the requirements of section 11-264-193 before it can be returned to service, unless the source of the leak is an aboveground portion of a tank system that can be inspected visually. If the source is an aboveground component that can be inspected visually, the component must be repaired and may be returned to service without secondary containment as long as the requirements of subsection (f) are satisfied. If a component is replaced to comply with the requirements of this paragraph, that component must satisfy the requirements for new tank systems or components in sections 11-264-192 and 11-264-193. Additionally, if a leak has occurred in any portion of a tank system component that is not readily accessible for visual inspection (e.g.,

the bottom of an inground or onground tank), the entire component must be provided with secondary containment in accordance with section 11-264-193 prior to being returned to use.

(f) Certification of major repairs. If the owner/operator has repaired a tank system in accordance with subsection (e), and the repair has been extensive (e.g., installation of an internal liner; repair of a ruptured primary containment or secondary containment vessel), the tank system must not be returned to service unless the owner/operator has obtained a certification by an independent, qualified, registered, professional engineer in accordance with subsection 11-270-11(d) that the repaired system is capable of handling hazardous wastes without release for the intended life of the system. This certification must be submitted to the director within seven days after returning the tank system to use. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.196)

§11-264-197 Closure and post-closure care. (a) At closure of a tank system, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated soils, and structures and equipment contaminated with waste, and manage them as hazardous waste, unless subsection 11-261-3(d) applies. The closure plan, closure activities, cost estimates for closure, and financial responsibility for tank systems must meet all of the requirements specified in Subchapters G and H.

(b) If the owner or operator demonstrates that not all contaminated soils can be practicably removed or decontaminated as required in subsection (a), then the owner or operator must close the tank system and perform post-closure care in accordance with the closure and post-closure care requirements that apply to landfills (section 11-264-310). In addition, for the purposes of closure, post-closure, and financial responsibility, such a tank system is then considered to be a landfill, and the owner or operator must meet all of the requirements for landfills specified in Subchapters G and H.

(c) If an owner or operator has a tank system that does not have secondary containment that meets the requirements of subsections 11-264-193 (b) through (f) and has not been granted a variance from the secondary containment requirements in accordance with subsection 11-264-193(g), then:

- (1) The closure plan for the tank system must include both a plan for complying with subsection (a) and a contingent plan for complying with subsection (b).
- (2) A contingent post-closure plan for complying with subsection (b) must be prepared and submitted as part of the permit application.

- (3) The cost estimates calculated for closure and post-closure care must reflect the costs of complying with the contingent closure plan and the contingent post-closure plan, if those costs are greater than the costs of complying with the closure plan prepared for the expected closure under subsection (a).
- (4) Financial assurance must be based on the cost estimates in paragraph (c)(3).
- (5) For the purposes of the contingent closure and post-closure plans, such a tank system is considered to be a landfill, and the contingent plans must meet all of the closure, post-closure, and financial responsibility requirements for landfills under Subchapters G and H. [Eff 6/18/94; comp]
(Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.197)

§11-264-198 Special requirements for ignitable or reactive wastes. (a) Ignitable or reactive waste must not be placed in tank systems, unless:

- (1) The waste is treated, rendered, or mixed before or immediately after placement in the tank system so that:
 - (i) The resulting waste, mixture, or dissolved material no longer meets the definition of ignitable or reactive waste under section 11-261-21 or 11-261-23, and
 - (ii) Subsection 11-264-17(b) is complied with; or
- (2) The waste is stored or treated in such a way that it is protected from any material or conditions that may cause the waste to ignite or react; or
- (3) The tank system is used solely for emergencies.

(b) The owner or operator of a facility where ignitable or reactive waste is stored or treated in a tank must comply with the requirements for the maintenance of protective distances between the waste management area and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the National Fire Protection Association's ``Flammable and Combustible Liquids Code,'' (1977 or 1981), (incorporated by reference, see section 11-260-11). [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.198)

§11-264-199 Special requirements for incompatible wastes.

(a) Incompatible wastes, or incompatible wastes and materials, must not be placed in the same tank system, unless subsection 11-264-17(b) is complied with.

(b) Hazardous waste must not be placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material, unless subsection 11-264-17(b) is complied with. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.199)

§11-264-200 Air emission standards. The owner or operator shall manage all hazardous waste placed in a tank in accordance with the applicable requirements of subchapters AA, BB, and CC. [Eff 3/13/99; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.200)

SUBCHAPTER K

SURFACE IMPOUNDMENTS

§11-264-220 Applicability. The rules in this subchapter apply to owners and operators of facilities that use surface impoundments to treat, store, or dispose of hazardous waste except as section 11-264-1 provides otherwise. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.220)

§11-264-221 Design and operating requirements. (a) Any surface impoundment that is not covered by subsection (c) or section 11-265-221 must have a liner for all portions of the impoundment (except for existing portions of such impoundments). The liner must be designed, constructed, and installed to prevent any migration of wastes out of the impoundment to the adjacent subsurface soil or ground water or surface water at any time during the active life (including the closure period) of the impoundment. The liner may be constructed of materials that may allow wastes to migrate into the liner (but not into the adjacent subsurface soil or ground water or surface water) during the active life of the facility, provided that the impoundment is closed in accordance with paragraph 11-264-228(a)(1). For impoundments that will be closed in accordance with paragraph 11-264-228(a)(2), the liner must be constructed of materials that can prevent wastes from migrating into the liner during the active life of the facility. The liner must be:

- (1) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

- (2) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and
- (3) Installed to cover all surrounding earth likely to be in contact with the waste or leachate.

(b) The owner or operator will be exempted from the requirements of subsection (a) if the director finds, based on a demonstration by the owner or operator, that alternate design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents (see section 11-264-93) into the ground water or surface water at any future time. In deciding whether to grant an exemption, the director will consider:

- (1) The nature and quantity of the wastes;
- (2) The proposed alternate design and operation;
- (3) The hydrogeologic setting of the facility, including the attenuative capacity and thickness of the liners and soils present between the impoundment and ground water or surface water; and
- (4) All other factors which would influence the quality and mobility of the leachate produced and the potential for it to migrate to ground water or surface water.

(c) The owner or operator of each new surface impoundment unit on which construction commences after January 29, 1992, each lateral expansion of a surface impoundment unit on which construction commences after July 29, 1992 and each replacement of an existing surface impoundment unit that is to commence reuse after July 29, 1992 must install two or more liners and a leachate collection and removal system between such liners. "Construction commences" is as defined in section 11-260-10 under "existing facility".

- (1) (i) The liner system must include:
 - (A) A top liner designed and constructed of materials (e.g., a geomembrane) to prevent the migration of hazardous constituents into such liner during the active life and post-closure care period; and
 - (B) A composite bottom liner, consisting of at least two components. The upper component must be designed and constructed of materials (e.g., a geomembrane) to prevent the migration of hazardous constituents into this component during the active life and post-closure care period. The lower component must be designed and constructed of materials to minimize the migration of hazardous constituents if a breach in the upper component were to occur. The lower component

must be constructed of at least three feet (91 cm) of compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} /cm/sec.

- (ii) The liners must comply with paragraphs (a)(1), (a)(2) and (a)(3).
- (2) The leachate collection and removal system between the liners, and immediately above the bottom composite liner in the case of multiple leachate collection and removal systems, is also a leak detection system. This leak detection system must be capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and post-closure care period. The requirements for a leak detection system in this paragraph are satisfied by installation of a system that is, at a minimum:
 - (i) Constructed with a bottom slope of one percent or more;
 - (ii) Constructed of granular drainage materials with a hydraulic conductivity of 1×10^{-1} /cm/sec or more and a thickness of twelve inches (30.5 cm) or more; or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-4} /m²sec or more;
 - (iii) Constructed of materials that are chemically resistant to the waste managed in the surface impoundment and the leachate expected to be generated, and of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes and any waste cover materials or equipment used at the surface impoundment;
 - (iv) Designed and operated to minimize clogging during the active life and post-closure care period; and
 - (v) Constructed with sumps and liquid removal methods (e.g., pumps) of sufficient size to collect and remove liquids from the sump and prevent liquids from backing up into the drainage layer. Each unit must have its own sump(s). The design of each sump and removal system must provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed.
- (3) The owner or operator shall collect and remove pumpable liquids in the sumps to minimize the head on the bottom liner.
- (4) The owner or operator of a leak detection system that is not located completely above the seasonal high water table must demonstrate that the operation of the leak

detection system will not be adversely affected by the presence of ground water.

(d) The director may approve alternative design or operating practices to those specified in subsection (c) if the owner or operator demonstrates to the director that such design and operating practices, together with location characteristics:

(1) Will prevent the migration of any hazardous constituent into the ground water or surface water at least as effectively as the liners and leachate collection and removal system specified in subsection (c); and

(2) Will allow detection of leaks of hazardous constituents through the top liner at least as effectively.

(e) The double liner requirement set forth in subsection

(c) may be waived by the director for any monofill, if:

(1) The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and such wastes do not contain constituents which would render the wastes hazardous for reasons other than the toxicity characteristics in section 11-261-24; and

(2) (i) (A) The monofill has at least one liner for which there is no evidence that such liner is leaking. For the purposes of this subsection, the term ``liner'' means a liner designed, constructed, installed, and operated to prevent hazardous waste from passing into the liner at any time during the active life of the facility, or a liner designed, constructed, installed, and operated to prevent hazardous waste from migrating beyond the liner to adjacent subsurface soil, ground water, or surface water at any time during the active life of the facility. In the case of any surface impoundment which has been exempted from the requirements of subsection (c) on the basis of a liner designed, constructed, installed, and operated to prevent hazardous waste from passing beyond the liner, at the closure of such impoundment, the owner or operator must remove or decontaminate all waste residues, all contaminated liner material, and contaminated soil to the extent practicable. If all contaminated soil is not removed or decontaminated, the owner or operator of such impoundment will comply with appropriate post-closure requirements, including but not limited to ground-water monitoring and corrective action;

- (B) The monofill is located more than one-quarter mile from an underground source of drinking water (as that term is defined in 40 CFR 144.3 (1998)); and
- (C) The monofill is in compliance with generally applicable ground-water monitoring requirements for facilities with permits under HRS section 342J-30; or
- (ii) The owner or operator demonstrates that the monofill is located, designed and operated so as to assure that there will be no migration of any hazardous constituent into ground water or surface water at any future time.
- (f) The owner or operator of any replacement surface impoundment unit is exempt from subsection (c) if:
 - (1) The existing unit was constructed in compliance with the design standards of sections 3004(o)(1)(A)(i) and (o)(5) of RCRA (1984); and
 - (2) There is no reason to believe that the liner is not functioning as designed.
- (g) A surface impoundment must be designed, constructed, maintained, and operated to prevent overtopping resulting from normal or abnormal operations; overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment; and human error.
- (h) A surface impoundment must have dikes that are designed, constructed, and maintained with sufficient structural integrity to prevent massive failure of the dikes. In ensuring structural integrity, it must not be presumed that the liner system will function without leakage during the active life of the unit.
- (i) The director will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this section are satisfied. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.221)

§11-264-222 Action leakage rate. (a) The director shall approve an action leakage rate for surface impoundment units subject to subsection 11-264-221(c) or (d). The action leakage rate is the maximum design flow rate that the leak detection system (LDS) can remove without the fluid head on the bottom liner exceeding one foot. The action leakage rate must include an adequate safety margin to allow for uncertainties in the design (e.g., slope, hydraulic conductivity, thickness of drainage material), construction, operation, and location of the LDS, waste and leachate characteristics, likelihood and amounts of other sources of liquids in the LDS, and proposed response actions (e.g., the action leakage rate must consider decreases in

the flow capacity of the system over time resulting from siltation and clogging, rib layover and creep of synthetic components of the system, overburden pressures, etc.)

(b) To determine if the action leakage rate has been exceeded, the owner or operator must convert the weekly or monthly flow rate from the monitoring data obtained under subsection 11-264-226(d) to an average daily flow rate (gallons per acre per day) for each sump. Unless the director approves a different calculation, the average daily flow rate for each sump must be calculated weekly during the active life and closure period, and if the unit is closed in accordance with subsection 11-264-228(b), monthly during the post-closure care period when monthly monitoring is required under subsection 11-264-226(d). [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.222)

§11-264-223 Response actions. (a) The owner or operator of surface impoundment units subject to subsection 11-264-221(c) or (d) must have an approved response action plan before receipt of waste. The response action plan must set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan must describe the actions specified in subsection (b).

(b) If the flow rate into the leak detection system exceeds the action leakage rate for any sump, the owner or operator must:

- (1) Notify the director in writing of the exceedence within seven days of the determination;
- (2) Submit a preliminary written assessment to the director within fourteen days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, and cause of any leaks, and short-term actions taken and planned;
- (3) Determine to the extent practicable the location, size, and cause of any leak;
- (4) Determine whether waste receipt should cease or be curtailed, whether any waste should be removed from the unit for inspection, repairs, or controls, and whether or not the unit should be closed;
- (5) Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks; and
- (6) Within thirty days after the notification that the action leakage rate has been exceeded, submit to the director the results of the analyses specified in paragraphs (b)(3), (b)(4), and (b)(5), the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the action leakage rate, the owner or operator must submit to the director a report

summarizing the results of any remedial actions taken and actions planned.

(c) To make the leak and/or remediation determinations in paragraphs (b)(3), (b)(4), and (b)(5), the owner or operator must:

- (1) (i) Assess the source of liquids and amounts of liquids by source,
- (ii) Conduct a fingerprint, hazardous constituent, or other analyses of the liquids in the leak detection system to identify the source of liquids and possible location of any leaks, and the hazard and mobility of the liquid; and
- (iii) Assess the seriousness of any leaks in terms of potential for escaping into the environment; or
- (2) Document why such assessments are not needed. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264-223)

§11-264-224 -- §11-264-225 [Reserved]

§11-264-226 Monitoring and inspection. (a) During construction and installation, liners (except in the case of existing portions of surface impoundments exempt from subsection 11-264-221(a)) and cover systems (e.g., membranes, sheets, or coatings) must be inspected for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, or foreign materials). Immediately after construction or installation:

- (1) Synthetic liners and covers must be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters; and
- (2) Soil-based and admixed liners and covers must be inspected for imperfections including lenses, cracks, channels, root holes, or other structural non-uniformities that may cause an increase in the permeability of the liner or cover.

(b) While a surface impoundment is in operation, it must be inspected weekly and after storms to detect evidence of any of the following:

- (1) Deterioration, malfunctions, or improper operation of overtopping control systems;
- (2) Sudden drops in the level of the impoundment's contents; and
- (3) Severe erosion or other signs of deterioration in dikes or other containment devices.

(c) Prior to the issuance of a permit, and after any extended period of time (at least six months) during which the impoundment was not in service, the owner or operator must obtain a certification from a qualified engineer that the impoundment's

dike, including that portion of any dike which provides freeboard, has structural integrity. The certification must establish, in particular, that the dike:

- (1) Will withstand the stress of the pressure exerted by the types and amounts of wastes to be placed in the impoundment; and
 - (2) Will not fail due to scouring or piping, without dependence on any liner system included in the surface impoundment construction.
- (d)(1) An owner or operator required to have a leak detection system under subsection 11-264-221(c) or (d) must record the amount of liquids removed from each leak detection system sump at least once each week during the active life and closure period.
- (2) After the final cover is installed, the amount of liquids removed from each leak detection system sump must be recorded at least monthly. If the liquid level in the sump stays below the pump operating level for two consecutive months, the amount of liquids in the sumps must be recorded at least quarterly. If the liquid level in the sump stays below the pump operating level for two consecutive quarters, the amount of liquids in the sumps must be recorded at least semi-annually. If at any time during the post-closure care period the pump operating level is exceeded at units on quarterly or semi-annual recording schedules, the owner or operator must return to monthly recording of amounts of liquids removed from each sump until the liquid level again stays below the pump operating level for two consecutive months.
 - (3) "Pump operating level" is a liquid level proposed by the owner or operator and approved by the director based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump. [Eff 6/18/94; comp
](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264-226)

§11-264-227 Emergency repairs; contingency plans. (a) A surface impoundment must be removed from service in accordance with subsection (b) when:

- (1) The level of liquids in the impoundment suddenly drops and the drop is not known to be caused by changes in the flows into or out of the impoundment; or
 - (2) The dike leaks.
- (b) When a surface impoundment must be removed from service as required by subsection (a), the owner or operator must:
- (1) Immediately shut off the flow or stop the addition of wastes into the impoundment;

- (2) Immediately contain any surface leakage which has occurred or is occurring;
 - (3) Immediately stop the leak;
 - (4) Take any other necessary steps to stop or prevent catastrophic failure;
 - (5) If a leak cannot be stopped by any other means, empty the impoundment; and
 - (6) Notify the director of the problem in writing within seven days after detecting the problem.
- (c) As part of the contingency plan required in Subchapter D, the owner or operator must specify a procedure for complying with the requirements of subsection (b).
- (d) No surface impoundment that has been removed from service in accordance with the requirements of this section may be restored to service unless the portion of the impoundment which was failing is repaired and the following steps are taken:
- (1) If the impoundment was removed from service as the result of actual or imminent dike failure, the dike's structural integrity must be recertified in accordance with subsection 11-264-226(c).
 - (2) If the impoundment was removed from service as the result of a sudden drop in the liquid level, then:
 - (i) For any existing portion of the impoundment, a liner must be installed in compliance with subsection 11-264-221(a); and
 - (ii) For any other portion of the impoundment, the repaired liner system must be certified by a qualified engineer as meeting the design specifications approved in the permit.
- (e) A surface impoundment that has been removed from service in accordance with the requirements of this section and that is not being repaired must be closed in accordance with the provisions of section 11-264-228. [Eff 6/18/94; comp
](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35)
 (Imp: 40 C.F.R. §264.227)

§11-264-228 Closure and post-closure care. (a) At closure, the owner or operator must:

- (1) Remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless subsection 11-261-3(d) applies; or
- (2)
 - (i) Eliminate free liquids by removing liquid wastes or solidifying the remaining wastes and waste residues;
 - (ii) Stabilize remaining wastes to a bearing capacity sufficient to support final cover; and

- (iii) Cover the surface impoundment with a final cover designed and constructed to:
 - (A) Provide long-term minimization of the migration of liquids through the closed impoundment;
 - (B) Function with minimum maintenance;
 - (C) Promote drainage and minimize erosion or abrasion of the final cover;
 - (D) Accommodate settling and subsidence so that the cover's integrity is maintained; and
 - (E) Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.
- (b) If some waste residues or contaminated materials are left in place at final closure, the owner or operator must comply with all post-closure requirements contained in sections 11-264-117 through 11-264-120, including maintenance and monitoring throughout the post-closure care period (specified in the permit under section 11-264-117). The owner or operator must:
 - (1) Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events;
 - (2) Maintain and monitor the leak detection system in accordance with subparagraph 11-264-221(c)(2)(iv) and paragraph 11-264-221(c)(3) and subsection 11-264-226(d), and comply with all other applicable leak detection system requirements of this chapter;
 - (3) Maintain and monitor the ground-water monitoring system and comply with all other applicable requirements of subchapter F; and
 - (4) Prevent run-on and run-off from eroding or otherwise damaging the final cover.
- (c)(1) If an owner or operator plans to close a surface impoundment in accordance with paragraph (a)(1), and the impoundment does not comply with the liner requirements of subsection 11-264-221(a) and is not exempt from them in accordance with subsection 11-264-221(b), then:
 - (i) The closure plan for the impoundment under section 11-264-112 must include both a plan for complying with paragraph (a)(1) and a contingent plan for complying with paragraph (a)(2) in case not all contaminated subsoils can be practicably removed at closure; and
 - (ii) The owner or operator must prepare a contingent post-closure plan under section 11-264-118 for complying with subsection (b) in case not all contaminated subsoils can be practicably removed at closure.

- (2) The cost estimates calculated under sections 11-264-142 and 11-264-144 for closure and post-closure care of an impoundment subject to this subsection must include the cost of complying with the contingent closure plan and the contingent post-closure plan, but are not required to include the cost of expected closure under paragraph (a)(1). [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264-228)

§11-264-229 Special requirements for ignitable or reactive waste. Ignitable or reactive waste must not be placed in a surface impoundment, unless the waste and impoundment satisfy all applicable requirements of chapter 11-268, and:

(a) The waste is treated, rendered, or mixed before or immediately after placement in the impoundment so that:

- (1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under section 11-261-21 or section 11-261-23; and

(2) Subsection 11-264-17(b) is complied with; or

(b) The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react; or

(c) The surface impoundment is used solely for emergencies. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.229)

§11-264-230 Special requirements for incompatible wastes. Incompatible wastes, or incompatible wastes and materials, (see Appendix V for examples) must not be placed in the same surface impoundment, unless subsection 11-264-17(b) is complied with. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.230)

§11-264-231 Special requirements for hazardous wastes F020, F021, F022, F023, F026, and F027. (a) Hazardous Wastes F020, F021, F022, F023, F026, and F027 must not be placed in a surface impoundment unless the owner or operator operates the surface impoundment in accordance with a management plan for these wastes that is approved by the director pursuant to the standards set out in this subsection, and in accord with all other applicable requirements of this chapter. The factors to be considered are:

- (1) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;

§11-264-231

- (2) The attenuative properties of underlying and surrounding soils or other materials;
- (3) The mobilizing properties of other materials co-disposed with these wastes; and
- (4) The effectiveness of additional treatment, design, or monitoring techniques.

(b) The director may determine that additional design, operating, and monitoring requirements are necessary for surface impoundments managing hazardous wastes F020, F021, F022, F023, F026, and F027 in order to reduce the possibility of migration of these wastes to ground water, surface water, or air so as to protect human health and the environment. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.231)

§11-264-232 Air emission standards. The owner or operator shall manage all hazardous waste placed in a surface impoundment in accordance with the applicable requirements of subchapters BB and CC. [Eff 3/13/99; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.232)

SUBCHAPTER L

WASTE PILES

§11-264-250 Applicability. (a) The rules in this subchapter apply to owners and operators of facilities that store or treat hazardous waste in piles, except as section 11-264-1 provides otherwise.

(b) The rules in this subchapter do not apply to owners or operators of waste piles that are closed with wastes left in place. Such waste piles are subject to regulation under subchapter N (Landfills).

(c) The owner or operator of any waste pile that is inside or under a structure that provides protection from precipitation so that neither run-off nor leachate is generated is not subject to regulation under section 11-264-251 or under Subchapter F, provided that:

- (1) Liquids or materials containing free liquids are not placed in the pile;
- (2) The pile is protected from surface water run-on by the structure or in some other manner;
- (3) The pile is designed and operated to control dispersal of the waste by wind, where necessary, by means other than wetting; and
- (4) The pile will not generate leachate through decomposition or other reactions. [Eff 6/18/94; comp

](Auth: HRS §§342J-4, 342J-31, 342J-34,
342J-35) (Imp: 40 C.F.R. §264.250)

§11-264-251 Design and operating requirements. (a) A waste pile (except for an existing portion of a waste pile) must have:

- (1) A liner that is designed, constructed, and installed to prevent any migration of wastes out of the pile into the adjacent subsurface soil or ground water or surface water at any time during the active life (including the closure period) of the waste pile. The liner may be constructed of materials that may allow waste to migrate into the liner itself (but not into the adjacent subsurface soil or ground water or surface water) during the active life of the facility. The liner must be:
 - (i) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;
 - (ii) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and
 - (iii) Installed to cover all surrounding earth likely to be in contact with the waste or leachate; and
- (2) A leachate collection and removal system immediately above the liner that is designed, constructed, maintained, and operated to collect and remove leachate from the pile. The director will specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed thirty cm (one foot). The leachate collection and removal system must be:
 - (i) Constructed of materials that are:
 - (A) Chemically resistant to the waste managed in the pile and the leachate expected to be generated; and
 - (B) Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlaying wastes, waste cover materials, and by any equipment used at the pile; and
 - (ii) Designed and operated to function without clogging through the scheduled closure of the waste pile.

(b) The owner or operator will be exempted from the requirements of subsection (a), if the director finds, based on a demonstration by the owner or operator, that alternate design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents (see section 11-264-93) into the ground water or surface water at any future time. In deciding whether to grant an exemption, the director will consider:

- (1) The nature and quantity of the wastes;
- (2) The proposed alternate design and operation;
- (3) The hydrogeologic setting of the facility, including attenuative capacity and thickness of the liners and soils present between the pile and ground water or surface water; and
- (4) All other factors which would influence the quality and mobility of the leachate produced and the potential for it to migrate to ground water or surface water.

(c) The owner or operator of each new waste pile unit on which construction commences after January 29, 1992, each lateral expansion of a waste pile unit on which construction commences after July 29, 1992, and each replacement of an existing waste pile unit that is to commence reuse after July 29, 1992 must install two or more liners and a leachate collection and removal system above and between such liners. "Construction commences" is as defined in section 11-260-10 under "existing facility".

- (1) (i) The liner system must include:

- (A) A top liner designed and constructed of materials (e.g., a geomembrane) to prevent the migration of hazardous constituents into such liner during the active life and post-closure care period; and
- (B) A composite bottom liner, consisting of at least two components. The upper component must be designed and constructed of materials (e.g., geomembrane) to prevent the migration of hazardous constituents into this component during the active life and post-closure care period. The lower component must be designed and constructed of materials to minimize the migration of hazardous constituents if a breach in the upper component were to occur. The lower component must be constructed of at least three feet (91 cm) of compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.

- (ii) The liners must comply with subparagraph

(a)(1)(i), (a)(1)(ii) and (a)(1)(iii).

- (2) The leachate collection and removal system immediately above the top liner must be designed, constructed, operated, and maintained to collect and remove leachate

from the waste pile during the active life and post-closure care period. The director will specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed 30 cm (one foot). The leachate collection and removal system must comply with subparagraphs (c)(3)(iii) and (c)(3)(iv).

- (3) The leachate collection and removal system between the liners, and immediately above the bottom composite liner in the case of multiple leachate collection and removal systems, is also a leak detection system. This leak detection system must be capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and post-closure care period. The requirements for a leak detection system in this paragraph are satisfied by installation of a system that is, at a minimum:
 - (i) Constructed with a bottom slope of one percent or more;
 - (ii) Constructed of granular drainage materials with a hydraulic conductivity of 1×10^{-2} cm/sec or more and a thickness of 12 inches (30.5 cm) or more; or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m²/sec or more;
 - (iii) Constructed of materials that are chemically resistant to the waste managed in the waste pile and the leachate expected to be generated, and of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and equipment used at the waste pile;
 - (iv) Designed and operated to minimize clogging during the active life and post-closure care period; and
 - (v) Constructed with sumps and liquid removal (e.g., pumps) of sufficient size to collect and remove liquids from the sump and prevent liquids from backing up into the drainage layer. Each unit must have its own sump(s). The design of each sump and removal system must provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed.
- (4) The owner or operator shall collect and remove pumpable liquids in the leak detection system sumps to minimize the head on the bottom liner.
- (5) The owner or operator of a leak detection system that is not located completely above the seasonal high water table must demonstrate that the operation of the leak

detection system will not be adversely affected by the presence of ground water.

(d) The director may approve alternative design or operating practices to those specified in subsection (c) if the owner or operator demonstrates to the director that such design and operating practices, together with location characteristics:

- (1) Will prevent the migration of any hazardous constituent into the ground water or surface water at least as effectively as the liners and leachate collection and removal systems specified in subsection (c); and
- (2) Will allow detection of any leaks of hazardous constituents through the top liner at least as effectively.

(e) Subsection (c) does not apply to monofills that are granted a waiver by the director in accordance with subsection 11-264-221(e).

(f) The owner or operator of any replacement waste pile unit is exempt from subsection (c) if:

- (1) The existing unit was constructed in compliance with the design standards of section 3004(o)(1)(A)(i) and (o)(5) of the RCRA (1984); and
- (2) There is no reason to believe that the liner is not functioning as designed.

(g) The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the pile during peak discharge from at least a 25-year storm.

(h) The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a twenty-four hour, twenty-five year storm.

(i) Collection and holding facilities (e.g., tanks or basins) associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

(j) If the pile contains any particulate matter which may be subject to wind dispersal, the owner or operator must cover or otherwise manage the pile to control wind dispersal.

(k) The director will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this section are satisfied. [Eff 6/18/94; comp
(Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35)
(Imp: 40 C.F.R. §264.251)]

§11-264-252 Action leakage rate. (a) The director shall approve an action leakage rate for waste pile units subject to subsection 11-264-251(c) or (d). The action leakage rate is the maximum design flow rate that the leak detection system (LDS) can remove without the fluid head on the bottom liner exceeding one

foot. The action leakage rate must include an adequate safety margin to allow for uncertainties in the design (e.g., slope, hydraulic conductivity, thickness of drainage material), construction, operation, and location of the LDS, waste and leachate characteristics, likelihood and amounts of other sources of liquids in the LDS, and proposed response actions (e.g., the action leakage rate must consider decreases in the flow capacity of the system over time resulting from siltation and clogging, rib layover and creep of synthetic components of the system, overburden pressures, etc.)

(b) To determine if the action leakage rate has been exceeded, the owner or operator must convert the weekly flow rate from the monitoring data obtained under subsection 11-264-254(c) to an average daily flow rate (gallons per acre per day) for each sump. Unless the director approves a different calculation, the average daily flow rate for each sump must be calculated weekly during the active life and closure period. [Eff 6/18/94; am 3/13/99; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.252)

§11-264-253 Response actions. (a) The owner or operator of surface impoundment units subject to subsection 11-264-251(c) or (d) must have an approved response action plan before receipt of waste. The response action plan must set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan must describe the actions specified in subsection (b).

(b) If the flow rate into the leak detection system exceeds the action leakage rate for any sump, the owner or operator must:

- (1) Notify the director in writing of the exceedence within seven days of the determination;
- (2) Submit a preliminary written assessment to the director within fourteen days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, and cause of any leaks, and short-term actions taken and planned;
- (3) Determine to the extent practicable the location, size, and cause of any leak;
- (4) Determine whether waste receipt should cease or be curtailed, whether any waste should be removed from the unit for inspection, repair, or controls, and whether or not the unit should be closed;
- (5) Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks; and
- (6) Within thirty days after the notification that the action leakage rate has been exceeded, submit to the director the results of the analyses specified in paragraphs (b)(3), (b)(4), and (b)(5), the results of actions taken, and actions planned. Monthly

thereafter, as long as the flow rate in the leak detection system exceeds the action leakage rate, the owner or operator must submit to the director a report summarizing the results of any remedial actions taken and actions planned.

(c) To make the leak and/or remediation determinations in paragraphs (b)(3), (b)(4), and (b)(5), the owner or operator must:

- (1)
 - (i) Assess the source of liquids and amounts of liquids by source,
 - (ii) Conduct a fingerprint, hazardous constituent, or other analyses of the liquids in the leak detection system to identify the source of liquids and possible location of any leaks, and the hazard and mobility of the liquid; and
 - (iii) Assess the seriousness of any leaks in terms of potential for escaping into the environment; or
- (2) Document why such assessments are not needed. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.253)

§11-264-254 Monitoring and inspection. (a) During construction or installation, liners (except in the case of existing portions of piles exempt from subsection 11-264-251(a)) and cover systems (e.g., membranes, sheets, or coatings) must be inspected for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, or foreign materials). Immediately after construction or installation:

- (1) Synthetic liners and covers must be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters; and
 - (2) Soil-based and admixed liners and covers must be inspected for imperfections including lenses, cracks, channels, root holes, or other structural non-uniformities that may cause an increase in the permeability of the liner or cover.
- (b) While a waste pile is in operation, it must be inspected weekly and after storms to detect evidence of any of the following:
- (1) Deterioration, malfunctions, or improper operation of run-on and run-off control systems;
 - (2) Proper functioning of wind dispersal control systems, where present; and
 - (3) The presence of leachate in and proper functioning of leachate collection and removal systems, where present.
- (c) An owner or operator required to have a leak detection system under subsection 11-264-251(c) must record the amount of liquids removed from each leak detection system sump at least once each week during the active life and closure period. [Eff

6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.254)

§11-264-255 [Reserved]

§11-264-256 Special requirements for ignitable or reactive waste. Ignitable or reactive waste must not be placed in a waste pile unless the waste and waste pile satisfy all applicable requirements of chapter 11-268, and:

(a) The waste is treated, rendered, or mixed before or immediately after placement in the pile so that:

(1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under section 11-261-21 or section 11-261-23; and

(2) Subsection 11-264-17(b) is complied with; or

(b) The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.256)

§11-264-257 Special requirements for incompatible wastes.

(a) Incompatible wastes, or incompatible wastes and materials, (see Appendix V for examples) must not be placed in the same pile, unless subsection 11-264-17(b) is complied with.

(b) A pile of hazardous waste that is incompatible with any waste or other material stored nearby in containers, other piles, open tanks, or surface impoundments must be separated from the other materials, or protected from them by means of a dike, berm, wall, or other device.

(c) Hazardous waste must not be piled on the same base where incompatible wastes or materials were previously piled, unless the base has been decontaminated sufficiently to ensure compliance with subsection 11-264-17(b). [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.257)

§11-264-258 Closure and post-closure care. (a) At closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless subsection 11-261-3(d) applies.

(b) If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures,

and equipment as required in subsection (a), the owner or operator finds that not all contaminated subsoils can be practicably removed or decontaminated, he must close the facility and perform post-closure care in accordance with the closure and post-closure care requirements that apply to landfills (section 11-264-310).

(c)(1) The owner or operator of a waste pile that does not comply with the liner requirements of paragraph 11-264-251(a)(1) and is not exempt from them in accordance with subsection 11-264-250(c) or subsection 11-264-251(b), must:

(i) Include in the closure plan for the pile under section 11-264-112 both a plan for complying with subsection (a) and a contingent plan for complying with subsection (b) in case not all contaminated subsoils can be practicably removed at closure; and

(ii) Prepare a contingent post-closure plan under section 11-264-118 for complying with subsection (b) in case not all contaminated subsoils can be practicably removed at closure.

(2) The cost estimates calculated under sections 11-264-142 and 11-264-144 for closure and post-closure care of a pile subject to this subsection must include the cost of complying with the contingent closure plan and the contingent post-closure plan, but are not required to include the cost of expected closure under subsection (a). [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.258)

§11-264-259 Special requirements for hazardous wastes FO20, FO21, FO22, FO23, FO26, and FO27. (a) Hazardous Wastes FO20, FO21, FO22, FO23, FO26, and FO27 must not be placed in waste piles that are not enclosed (as defined in subsection 11-264-250(c)) unless the owner or operator operates the waste pile in accordance with a management plan for these wastes that is approved by the director pursuant to the standards set out in this subsection, and in accord with all other applicable requirements of this chapter. The factors to be considered are:

- (1) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;
- (2) The attenuative properties of underlying and surrounding soils or other materials;
- (3) The mobilizing properties of other materials co-disposed with these wastes; and

(4) The effectiveness of additional treatment, design, or monitoring techniques.

(b) The director may determine that additional design, operating, and monitoring requirements are necessary for piles managing hazardous wastes FO20, FO21, FO22, FO23, FO26, and, FO27 in order to reduce the possibility of migration of these wastes to ground water, surface water, or air so as to protect human health and the environment. [Eff 6/18/94; comp]
(Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.259)

SUBCHAPTER M

LAND TREATMENT

§11-264-270 Applicability. The rules in this subchapter apply to owners and operators of facilities that treat or dispose of hazardous waste in land treatment units, except as section 11-264-1 provides otherwise. [Eff 6/18/94; comp]
(Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.270)

§11-264-271 Treatment program. (a) An owner or operator subject to this subchapter must establish a land treatment program that is designed to ensure that hazardous constituents placed in or on the treatment zone are degraded, transformed, or immobilized within the treatment zone. The director will specify in the facility permit the elements of the treatment program, including:

- (1) The wastes that are capable of being treated at the unit based on a demonstration under section 11-264-272;
- (2) Design measures and operating practices necessary to maximize the success of degradation, transformation, and immobilization processes in the treatment zone in accordance with subsection 11-264-273(a); and
- (3) Unsaturated zone monitoring provisions meeting the requirements of section 11-264-278.

(b) The director will specify in the facility permit the hazardous constituents that must be degraded, transformed, or immobilized under this subchapter. Hazardous constituents are constituents identified in Appendix VIII of chapter 11-261 that are reasonably expected to be in, or derived from, waste placed in or on the treatment zone.

(c) The director will specify the vertical and horizontal dimensions of the treatment zone in the facility permit. The treatment zone is the portion of the unsaturated zone below and including the land surface in which the owner or operator intends to maintain the conditions necessary for effective degradation,

transformation, or immobilization of hazardous constituents. The maximum depth of the treatment zone must be:

- (1) No more than 1.5 meters (5 feet) from the initial soil surface; and
- (2) More than 1 meter (3 feet) above the seasonal high water table. [Eff 6/18/94; comp]
(Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.271)

§11-264-272 Treatment demonstration. (a) For each waste that will be applied to the treatment zone, the owner or operator must demonstrate, prior to application of the waste, that hazardous constituents in the waste can be completely degraded, transformed, or immobilized in the treatment zone.

(b) In making this demonstration, the owner or operator may use field tests, laboratory analyses, available data, or, in the case of existing units, operating data. If the owner or operator intends to conduct field tests or laboratory analyses in order to make the demonstration required under subsection (a), he must obtain a treatment or disposal permit under section 11-270-63. The director will specify in this permit the testing, analytical, design, and operating requirements (including the duration of the tests and analyses, and, in the case of field tests, the horizontal and vertical dimensions of the treatment zone, monitoring procedures, closure and clean-up activities) necessary to meet the requirements in subsection (c).

(c) Any field test or laboratory analysis conducted in order to make a demonstration under subsection (a) must:

- (1) Accurately simulate the characteristics and operating conditions for the proposed land treatment unit including:
 - (i) The characteristics of the waste (including the presence of Appendix VIII of chapter 11-261 constituents);
 - (ii) The climate in the area;
 - (iii) The topography of the surrounding area;
 - (iv) The characteristics of the soil in the treatment zone (including depth); and
 - (v) The operating practices to be used at the unit.
- (2) Be likely to show that hazardous constituents in the waste to be tested will be completely degraded, transformed, or immobilized in the treatment zone of the proposed land treatment unit; and
- (3) Be conducted in a manner that protects human health and the environment considering:
 - (i) The characteristics of the waste to be tested;
 - (ii) The operating and monitoring measures taken during the course of the test;
 - (iii) The duration of the test;

- (iv) The volume of waste used in the test;
- (v) In the case of field tests, the potential for migration of hazardous constituents to ground water or surface water. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.272)

§11-264-273 Design and operating requirements. The director will specify in the facility permit how the owner or operator will design, construct, operate, and maintain the land treatment unit in compliance with this section.

(a) The owner or operator must design, construct, operate, and maintain the unit to maximize the degradation, transformation, and immobilization of hazardous constituents in the treatment zone. The owner or operator must design, construct, operate, and maintain the unit in accord with all design and operating conditions that were used in the treatment demonstration under section 11-264-272. At a minimum, the director will specify the following in the facility permit:

- (1) The rate and method of waste application to the treatment zone;
- (2) Measures to control soil pH;
- (3) Measures to enhance microbial or chemical reactions (e.g., fertilization, tilling); and
- (4) Measures to control the moisture content of the treatment zone.

(b) The owner or operator must design, construct, operate, and maintain the treatment zone to minimize run-off of hazardous constituents during the active life of the land treatment unit.

(c) The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the treatment zone during peak discharge from at least a twenty-five year storm.

(d) The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a twenty-four hour, twenty-five year storm.

(e) Collection and holding facilities (e.g., tanks or basins) associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain the design capacity of the system.

(f) If the treatment zone contains particulate matter which may be subject to wind dispersal, the owner or operator must manage the unit to control wind dispersal.

(g) The owner or operator must inspect the unit weekly and after storms to detect evidence of:

- (1) Deterioration, malfunctions, or improper operation of run-on and run-off control systems; and

§11-264-273

- (2) Improper functioning of wind dispersal control measures. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.273)

§11-264-274 -- §11-264-275 [Reserved]

§11-264-276 Food-chain crops. The director may allow the growth of food-chain crops in or on the treatment zone only if the owner or operator satisfies the conditions of this section. The director will specify in the facility permit the specific food-chain crops which may be grown.

- (a)(1) The owner or operator must demonstrate that there is no substantial risk to human health caused by the growth of such crops in or on the treatment zone by demonstrating, prior to the planting of such crops, that hazardous constituents other than cadmium:
- (i) Will not be transferred to the food or feed portions of the crop by plant uptake or direct contact, and will not otherwise be ingested by food-chain animals (e.g., by grazing); or
 - (ii) Will not occur in greater concentrations in or on the food or feed portions of crops grown on the treatment zone than in or on identical portions of the same crops grown on untreated soils under similar conditions in the same region.
- (2) The owner or operator must make the demonstration required under this subsection prior to the planting of crops at the facility for all constituents identified in Appendix VIII of chapter 11-261 that are reasonably expected to be in, or derived from, waste placed in or on the treatment zone.
- (3) In making a demonstration under this subsection, the owner or operator may use field tests, greenhouse studies, available data, or, in the case of existing units, operating data, and must:
- (i) Base the demonstration on conditions similar to those present in the treatment zone, including soil characteristics (e.g., pH, cation exchange capacity), specific wastes, application rates, application methods, and crops to be grown; and
 - (ii) Describe the procedures used in conducting any tests, including the sample selection criteria, sample size, analytical methods, and statistical procedures.
- (4) If the owner or operator intends to conduct field tests or greenhouse studies in order to make the

demonstration required under this subsection, he must obtain a permit for conducting such activities.

(b) The owner or operator must comply with the following conditions if cadmium is contained in wastes applied to the treatment zone:

- (1) (i) The pH of the waste and soil mixture must be 6.5 or greater at the time of each waste application, except for waste containing cadmium at concentrations of 2 mg/kg (dry weight) or less;
- (ii) The annual application of cadmium from waste must not exceed 0.5 kilograms per hectare (kg/ha) on land used for production of tobacco, leafy vegetables, or root crops grown for human consumption. For other food-chain crops, the annual cadmium application rate must not exceed:

Time period	Annual Cd application rate (kilograms per hectare)
Present to June 30, 1984	2.0
July 1, 1984 to December 31, 1986	1.25
Beginning January 1, 1987	0.5

- (iii) The cumulative application of cadmium from waste must not exceed 5 kg/ha if the waste and soil mixture has a pH of less than 6.5; and
 - (iv) If the waste and soil mixture has a pH of 6.5 or greater or is maintained at a pH of 6.5 or greater during crop growth, the cumulative application of cadmium from waste must not exceed: 5 kg/ha if soil cation exchange capacity (CEC) is less than 5 meq/100g; 10 kg/ha if soil CEC is 5-15 meq/100g; and 20 kg/ha if soil CEC is greater than 15 meq/100g; or
- (2) (i) Animal feed must be the only food-chain crop produced;
 - (ii) The pH of the waste and soil mixture must be 6.5 or greater at the time of waste application or at the time the crop is planted, whichever occurs later, and this pH level must be maintained whenever food-chain crops are grown;

§11-264-276

- (iii) There must be an operating plan which demonstrates how the animal feed will be distributed to preclude ingestion by humans. The operating plan must describe the measures to be taken to safeguard against possible health hazards from cadmium entering the food chain, which may result from alternative land uses; and
- (iv) Future property owners must be notified by a stipulation in the land record or property deed which states that the property has received waste at high cadmium application rates and that food-chain crops must not be grown except in compliance with paragraph (b)(2). [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.276)

§11-264-277 [Reserved]

§11-264-278 Unsaturated zone monitoring. An owner or operator subject to this subchapter must establish an unsaturated zone monitoring program to discharge the following responsibilities:

- (a) The owner or operator must monitor the soil and soil-pore liquid to determine whether hazardous constituents migrate out of the treatment zone.
 - (1) The director will specify the hazardous constituents to be monitored in the facility permit. The hazardous constituents to be monitored are those specified under subsection 11-264-271(b).
 - (2) The director may require monitoring for principal hazardous constituents (PHCs) in lieu of the constituents specified under subsection 11-264-271(b). PHCs are hazardous constituents contained in the wastes to be applied at the unit that are the most difficult to treat, considering the combined effects of degradation, transformation, and immobilization. The director will establish PHCs if he finds, based on waste analyses, treatment demonstrations, or other data, that effective degradation, transformation, or immobilization of the PHCs will assure treatment at at least equivalent levels for the other hazardous constituents in the wastes.
- (b) The owner or operator must install an unsaturated zone monitoring system that includes soil monitoring using soil cores and soil-pore liquid monitoring using devices such as lysimeters. The unsaturated zone monitoring system must consist of a sufficient number of sampling points at appropriate locations and depths to yield samples that:

(1) Represent the quality of background soil-pore liquid quality and the chemical make-up of soil that has not been affected by leakage from the treatment zone; and

(2) Indicate the quality of soil-pore liquid and the chemical make-up of the soil below the treatment zone.

(c) The owner or operator must establish a background value for each hazardous constituent to be monitored under subsection (a). The permit will specify the background values for each constituent or specify the procedures to be used to calculate the background values.

- (1) Background soil values may be based on a one-time sampling at a background plot having characteristics similar to those of the treatment zone.
- (2) Background soil-pore liquid values must be based on at least quarterly sampling for one year at a background plot having characteristics similar to those of the treatment zone.
- (3) The owner or operator must express all background values in a form necessary for the determination of statistically significant increases under subsection (f).
- (4) In taking samples used in the determination of all background values, the owner or operator must use an unsaturated zone monitoring system that complies with paragraph (b)(1).

(d) The owner or operator must conduct soil monitoring and soil-pore liquid monitoring immediately below the treatment zone. The director will specify the frequency and timing of soil and soil-pore liquid monitoring in the facility permit after considering the frequency, timing, and rate of waste application, and the soil permeability. The owner or operator must express the results of soil and soil-pore liquid monitoring in a form necessary for the determination of statistically significant increases under subsection (f).

(e) The owner or operator must use consistent sampling and analysis procedures that are designed to ensure sampling results that provide a reliable indication of soil-pore liquid quality and the chemical make-up of the soil below the treatment zone. At a minimum, the owner or operator must implement procedures and techniques for:

- (1) Sample collection;
- (2) Sample preservation and shipment;
- (3) Analytical procedures; and
- (4) Chain of custody control.

(f) The owner or operator must determine whether there is a statistically significant change over background values for any hazardous constituent to be monitored under subsection (a) below the treatment zone each time he conducts soil monitoring and soil-pore liquid monitoring under subsection (d).

- (1) In determining whether a statistically significant increase has occurred, the owner or operator must compare the value of each constituent, as determined under subsection (d), to the background value for that constituent according to the statistical procedure specified in the facility permit under this subsection.
 - (2) The owner or operator must determine whether there has been a statistically significant increase below the treatment zone within a reasonable time period after completion of sampling. The director will specify that time period in the facility permit after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of soil and soil-pore liquid samples.
 - (3) The owner or operator must determine whether there is a statistically significant increase below the treatment zone using a statistical procedure that provides reasonable confidence that migration from the treatment zone will be identified. The director will specify a statistical procedure in the facility permit that he finds:
 - (i) Is appropriate for the distribution of the data used to establish background values; and
 - (ii) Provides a reasonable balance between the probability of falsely identifying migration from the treatment zone and the probability of failing to identify real migration from the treatment zone.
- (g) If the owner or operator determines, pursuant to subsection (f), that there is a statistically significant increase of hazardous constituents below the treatment zone, he must:
- (1) Notify the director of this finding in writing within seven days. The notification must indicate what constituents have shown statistically significant increases.
 - (2) Within ninety days, submit to the director an application for a permit modification to modify the operating practices at the facility in order to maximize the success of degradation, transformation, or immobilization processes in the treatment zone.
- (h) If the owner or operator determines, pursuant to subsection (f), that there is a statistically significant increase of hazardous constituents below the treatment zone, he may demonstrate that a source other than regulated units caused the increase or that the increase resulted from an error in sampling, analysis, or evaluation. While the owner or operator may make a demonstration under this subsection in addition to, or in lieu of, submitting a permit modification application under paragraph (g)(2), he is not relieved of the requirement to submit

a permit modification application within the time specified in paragraph (g)(2) unless the demonstration made under this subsection successfully shows that a source other than regulated units caused the increase or that the increase resulted from an error in sampling, analysis, or evaluation. In making a demonstration under this subsection, the owner or operator must:

- (1) Notify the director in writing within seven days of determining a statistically significant increase below the treatment zone that he intends to make a determination under this subsection;
- (2) Within ninety days, submit a report to the director demonstrating that a source other than the regulated units caused the increase or that the increase resulted from error in sampling, analysis, or evaluation;
- (3) Within ninety days, submit to the director an application for a permit modification to make any appropriate changes to the unsaturated zone monitoring program at the facility; and
- (4) Continue to monitor in accordance with the unsaturated zone monitoring program established under this section. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.278)

§11-264-279 Recordkeeping. The owner or operator must include hazardous waste application dates and rates in the operating record required under section 11-264-73. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.279)

§11-264-280 Closure and post-closure care. (a) During the closure period the owner or operator must:

- (1) Continue all operations (including pH control) necessary to maximize degradation, transformation, or immobilization of hazardous constituents within the treatment zone as required under subsection 11-264-273(a), except to the extent such measures are inconsistent with paragraph (a)(8).
- (2) Continue all operations in the treatment zone to minimize run-off of hazardous constituents as required under subsection 11-264-273(b);
- (3) Maintain the run-on control system required under subsection 11-264-273(c);
- (4) Maintain the run-off management system required under subsection 11-264-273(d);
- (5) Control wind dispersal of hazardous waste if required under subsection 11-264-273(f);

- (6) Continue to comply with any prohibitions or conditions concerning growth of food-chain crops under section 11-264-276;
- (7) Continue unsaturated zone monitoring in compliance with section 11-264-278, except that soil-pore liquid monitoring may be terminated ninety days after the last application of waste to the treatment zone; and
- (8) Establish a vegetative cover on the portion of the facility being closed at such time that the cover will not substantially impede degradation, transformation, or immobilization of hazardous constituents in the treatment zone. The vegetative cover must be capable of maintaining growth without extensive maintenance.

(b) For the purpose of complying with section 11-264-115, when closure is completed the owner or operator may submit to the director certification by an independent qualified soil scientist, in lieu of an independent registered professional engineer, that the facility has been closed in accordance with the specifications in the approved closure plan.

(c) During the post-closure care period the owner or operator must:

- (1) Continue all operations (including pH control) necessary to enhance degradation and transformation and sustain immobilization of hazardous constituents in the treatment zone to the extent that such measures are consistent with other post-closure care activities;
- (2) Maintain a vegetative cover over closed portions of the facility;
- (3) Maintain the run-on control system required under subsection 11-264-273(c);
- (4) Maintain the run-off management system required under subsection 11-264-273(d);
- (5) Control wind dispersal of hazardous waste if required under subsection 11-264-273(f);
- (6) Continue to comply with any prohibitions or conditions concerning growth of food-chain crops under section 11-264-276; and
- (7) Continue unsaturated zone monitoring in compliance with section 11-264-278, except that soil-pore liquid monitoring may be terminated ninety days after the last application of waste to the treatment zone.

(d) The owner or operator is not subject to regulation under paragraphs (a)(8) and (c) if the director finds that the level of hazardous constituents in the treatment zone soil does not exceed the background value of those constituents by an amount that is statistically significant when using the test specified in paragraph (d)(3). The owner or operator may submit such a demonstration to the director at any time during the closure or post-closure care periods. For the purposes of this subsection:

- (1) The owner or operator must establish background soil values and determine whether there is a statistically significant increase over those values for all hazardous constituents specified in the facility permit under subsection 11-264-271 (b).
 - (i) Background soil values may be based on a one-time sampling of a background plot having characteristics similar to those of the treatment zone.
 - (ii) The owner or operator must express background values and values for hazardous constituents in the treatment zone in a form necessary for the determination of statistically significant increases under paragraph (d)(3).
 - (2) In taking samples used in the determination of background and treatment zone values, the owner or operator must take samples at a sufficient number of sampling points and at appropriate locations and depths to yield samples that represent the chemical make-up of soil that has not been affected by leakage from the treatment zone and the soil within the treatment zone, respectively.
 - (3) In determining whether a statistically significant increase has occurred, the owner or operator must compare the value of each constituent in the treatment zone to the background value for that constituent using a statistical procedure that provides reasonable confidence that constituent presence in the treatment zone will be identified. The owner or operator must use a statistical procedure that:
 - (i) Is appropriate for the distribution of the data used to establish background values; and
 - (ii) Provides a reasonable balance between the probability of falsely identifying hazardous constituent presence in the treatment zone and the probability of failing to identify real presence in the treatment zone.
- (e) The owner or operator is not subject to regulation under Subchapter F if the director finds that the owner or operator satisfies subsection (d) and if unsaturated zone monitoring under section 11-264-278 indicates that hazardous constituents have not migrated beyond the treatment zone during the active life of the land treatment unit. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35)
(Imp: 40 C.F.R. §264.280)

§11-264-281 Special requirements for ignitable or reactive waste. The owner or operator must not apply ignitable or reactive waste to the treatment zone unless the waste and the

§11-264-281

treatment zone meet all applicable requirements of chapter 11-268, and:

(a) The waste is immediately incorporated into the soil so that:

- (1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under section 11-261-21 or section 11-261-23; and
- (2) Subsection 11-264-17(b) is complied with; or

(b) The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.281)

§11-264-282 Special requirements for incompatible wastes.
The owner or operator must not place incompatible wastes, or incompatible wastes and materials (see Appendix V for examples), in or on the same treatment zone, unless subsection 11-264-17(b) is complied with. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.282)

§11-264-283 Special requirements for hazardous wastes FO20, FO21, FO22, FO23, FO26, and FO27. (a) Hazardous Wastes FO20, FO21, FO22, FO23, FO26 and, FO27 must not be placed in a land treatment unit unless the owner or operator operates the facility in accordance with a management plan for these wastes that is approved by the director pursuant to the standards set out in this subsection, and in accord with all other applicable requirements of this chapter. The factors to be considered are:

- (1) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through soil or to volatilize or escape into the atmosphere;
- (2) The attenuative properties of underlying and surrounding soils or other materials;
- (3) The mobilizing properties of other materials co-disposed with these wastes; and
- (4) The effectiveness of additional treatment, design, or monitoring techniques.

(b) The director may determine that additional design, operating, and monitoring requirements are necessary for land treatment facilities managing hazardous wastes FO20, FO21, FO22, FO23, FO26, and FO27 in order to reduce the possibility of migration of these wastes to ground water, surface water, or air so as to protect human health and the environment. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.283)

SUBCHAPTER N

LANDFILLS

§11-264-300 Applicability. The rules in this subchapter apply to owners and operators of facilities that dispose of hazardous waste in landfills, except as section 11-264-1 provides otherwise. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.300)

§11-264-301 Design and operating requirements. (a) Any landfill that is not covered by subsection (c) or subsection 11-265-301(a) must have a liner system for all portions of the landfill (except for existing portions of such landfill). The liner system must have:

- (1) A liner that is designed, constructed, and installed to prevent any migration of wastes out of the landfill to the adjacent subsurface soil or ground water or surface water at anytime during the active life (including the closure period) of the landfill. The liner must be constructed of materials that prevent wastes from passing into the liner during the active life of the facility. The liner must be:
 - (i) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;
 - (ii) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and
 - (iii) Installed to cover all surrounding earth likely to be in contact with the waste or leachate; and
- (2) A leachate collection and removal system immediately above the liner that is designed, constructed, maintained, and operated to collect and remove leachate from the landfill. The director will specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed thirty cm (one foot). The leachate collection and removal system must be:
 - (i) Constructed of materials that are:

- (A) Chemically resistant to the waste managed in the landfill and the leachate expected to be generated; and
 - (B) Of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the landfill; and
- (ii) Designed and operated to function without clogging through the scheduled closure of the landfill.
- (b) The owner or operator will be exempted from the requirements of subsection (a) if the director finds, based on a demonstration by the owner or operator, that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents (see section 11-264-93) into the ground water or surface water at any future time. In deciding whether to grant an exemption, the director will consider:
- (1) The nature and quantity of the wastes;
 - (2) The proposed alternate design and operation;
 - (3) The hydrogeologic setting of the facility, including the attenuative capacity and thickness of the liners and soils present between the landfill and ground water or surface water; and
 - (4) All other factors which would influence the quality and mobility of the leachate produced and the potential for it to migrate to ground water or surface water.
- (c) The owner or operator of each new landfill unit on which construction commences after January 29, 1992, each lateral expansion of a landfill unit on which construction commences after July 29, 1992, and each replacement of an existing landfill unit that is to commence reuse after July 29, 1992 must install two or more liners and a leachate collection and removal system above and between such liners. "Construction commences" is as defined in section 11-260-10 under "existing facility".
- (1) (i) The liner system must include:
 - (A) A top liner designed and constructed of materials (e.g., a geomembrane) to prevent the migration of hazardous constituents into such liner during the active life and post-closure care period; and
 - (B) A composite bottom liner, consisting of at least two components. The upper component must be designed and constructed of materials (e.g., a geomembrane) to prevent the migration of hazardous constituents into this component during the active life and post-closure care period. The lower component must be designed and constructed of materials to minimize the migration of hazardous

constituents if a breach in the upper component were to occur. The lower component must be constructed of at least three feet (91 cm) of compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.

- (ii) The liners must comply with subparagraphs (a)(1)(i), (a)(1)(ii), and (a)(1)(iii).
- (2) The leachate collection and removal system immediately above the top liner must be designed, constructed, operated, and maintained to collect and remove leachate from the landfill during the active life and post-closure care period. The director will specify design and operating conditions in the permit to ensure that the leachate depth over the liner does not exceed thirty cm (one foot). The leachate collection and removal system must comply with subparagraphs (c)(3)(iii) and (c)(3)(iv).
- (3) The leachate collection and removal system between the liners, and immediately above the bottom composite liner in the case of multiple leachate collection and removal systems, is also a leak detection system. This leak detection system must be capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and post-closure care period. The requirements for a leak detection system in this paragraph are satisfied by installation of a system that is, at a minimum:
 - (i) Constructed with a bottom slope of one percent or more;
 - (ii) Constructed of granular drainage materials with a hydraulic conductivity of 1×10^{-2} cm/sec or more and a thickness of 12 inches (30.5 cm) or more; or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m²/sec or more;
 - (iii) Constructed of materials that are chemically resistant to the waste managed in the landfill and the leachate expected to be generated, and of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and equipment used at the landfill;
 - (iv) Designed and operated to minimize clogging during the active life and post-closure care period; and
 - (v) Constructed with sumps and liquid removal methods (e.g., pumps) of sufficient size to collect and remove liquids from the sump and prevent liquids

from backing up into the drainage layer. Each unit must have its own sump(s). The design of each sump and removal system must provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed.

- (4) The owner or operator shall collect and remove pumpable liquids in the leak detection system sumps to minimize the head on the bottom liner.
- (5) The owner or operator of a leak detection system that is not located completely above the seasonal high water table must demonstrate that the operation of the leak detection system will not be adversely affected by the presence of ground water.
- (d) The director may approve alternative design or operating practices to those specified in subsection (c) if the owner or operator demonstrates to the director that such design and operating practices, together with location characteristics:
 - (1) Will prevent the migration of any hazardous constituent into the ground water or surface water at least as effectively as the liners and leachate collection and removal systems specified in subsection (c); and
 - (2) Will allow detection of leaks of hazardous constituents through the top liner at least as effectively.
- (e) The double liner requirement set forth in subsection (c) may be waived by the director for any monofill, if:
 - (1) The monofill contains only hazardous wastes from foundry furnace emission controls or metal casting molding sand, and such wastes do not contain constituents which would render the wastes hazardous for reasons other than the Toxicity Characteristic in section 11-261-24, with EPA Hazardous Waste Numbers D004 through D017; and
 - (2)
 - (i) (A) The monofill has at least one liner for which there is no evidence that such liner is leaking;
 - (B) The monofill is located more than one-quarter mile from an underground source of drinking water (as that term is defined in 40 CFR 144.3 (1998)); and
 - (C) The monofill is in compliance with generally applicable ground-water monitoring requirements for facilities with permits under HRS section 342J-30; or
 - (ii) The owner or operator demonstrates that the monofill is located, designed and operated so as to assure that there will be no migration of any hazardous constituent into ground water or surface water at any future time.
- (f) The owner or operator of any replacement landfill unit is exempt from subsection (c) if:

- (1) The existing unit was constructed in compliance with the design standards of section 3004(o)(1)(A)(i) and (o)(5) of RCRA (1984); and
- (2) There is no reason to believe that the liner is not functioning as designed.
- (g) The owner or operator must design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the landfill during peak discharge from at least a twenty-five year storm.
- (h) The owner or operator must design, construct, operate, and maintain a run-off management system to collect and control at least the water volume resulting from a twenty-four hour, twenty-five year storm.
- (i) Collection and holding facilities (e.g., tanks or basins) associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.
- (j) If the landfill contains any particulate matter which may be subject to wind dispersal, the owner or operator must cover or otherwise manage the landfill to control wind dispersal.
- (k) The director will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this section are satisfied.
- (l) [Reserved] [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp 40 C.F.R. §264.301)

§11-264-302 Action leakage rate. (a) The director shall approve an action leakage rate for landfill units subject to subsection 11-264-301(c) or (d). The action leakage rate is the maximum design flow rate that the leak detection system (LDS) can remove without the fluid head on the bottom liner exceeding one foot. The action leakage rate must include an adequate safety margin to allow for uncertainties in the design (e.g., slope, hydraulic conductivity, thickness of drainage material), construction, operation, and location of the LDS, waste and leachate characteristics, likelihood and amounts of other sources of liquids in the LDS, and proposed response actions (e.g., the action leakage rate must consider decreases in the flow capacity of the system over time resulting from siltation and clogging, rib layover and creep of synthetic components of the system, overburden pressures, etc.).

(b) To determine if the action leakage rate has been exceeded, the owner or operator must convert the weekly or monthly flow rate from the monitoring data obtained under subsection 11-264-303(c) to an average daily flow rate (gallons per acre per day) for each sump. Unless the director approves a different calculation, the average daily flow rate for each sump must be calculated weekly during the active life and closure

period, and monthly during the post-closure care period when monthly monitoring is required under subsection 11-264-303(c). [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.302)

§11-264-303 Monitoring and inspection. (a) During construction or installation, liners (except in the case of existing portions of landfills exempt from subsection 11-264-301(a)) and cover systems (e.g., membranes, sheets, or coatings) must be inspected for uniformity, damage, and imperfections (e.g., holes, cracks, thin spots, or foreign materials). Immediately after construction or installation:

- (1) Synthetic liners and covers must be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters; and
 - (2) Soil-based and admixed liners and covers must be inspected for imperfections including lenses, cracks, channels, root holes, or other structural non-uniformities that may cause an increase in the permeability of the liner or cover.
- (b) While a landfill is in operation, it must be inspected weekly and after storms to detect evidence of any of the following:
- (1) Deterioration, malfunctions, or improper operation of run-on and run-off control systems;
 - (2) Proper functioning of wind dispersal control systems, where present; and
 - (3) The presence of leachate in and proper functioning of leachate collection and removal systems, where present.
- (c) (1) An owner or operator required to have a leak detection system under subsection 11-264-301(c) or (d) must record the amount of liquids removed from each leak detection system sump at least once each week during the active life and closure period.
- (2) After the final cover is installed, the amount of liquids removed from each leak detection system sump must be recorded at least monthly. If the liquid level in the sump stays below the pump operating level for two consecutive months, the amount of liquids in the sumps must be recorded at least quarterly. If the liquid level in the sump stays below the pump operating level for two consecutive quarters, the amount of liquids in the sumps must be recorded at least semi-annually. If at any time during the post-closure care period the pump operating level is exceeded at units on quarterly or semi-annual recording schedules, the owner or operator must return to monthly recording of amounts of liquids removed from each sump until

- the liquid level again stays below the pump operating level for two consecutive months.
- (3) "Pump operating level" is a liquid level proposed by the owner or operator and approved by the director based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.303)

§11-264-304 Response actions. (a) The owner or operator of landfill units subject to subsection 11-264-301(c) or (d) must have an approved response action plan before receipt of waste. The response action plan must set forth the actions to be taken if the action leakage rate has been exceeded. At a minimum, the response action plan must describe the actions specified in subsection (b).

(b) If the flow rate into the leak detection system exceeds the action leakage rate for any sump, the owner or operator must:

- (1) Notify the director in writing of the exceedence within seven days of the determination;
- (2) Submit a preliminary written assessment to the director within fourteen days of the determination, as to the amount of liquids, likely sources of liquids, possible location, size, and cause of any leaks, and short-term actions taken and planned;
- (3) Determine to the extent practicable the location, size, and cause of any leak;
- (4) Determine whether waste receipt should cease or be curtailed, whether any waste should be removed from the unit for inspection, repairs, or controls, and whether or not the unit should be closed;
- (5) Determine any other short-term and longer-term actions to be taken to mitigate or stop any leaks; and
- (6) Within thirty days after the notification that the action leakage rate has been exceeded, submit to the director the results of the analyses specified in paragraphs (b)(3), (b)(4), and (b)(5), the results of actions taken, and actions planned. Monthly thereafter, as long as the flow rate in the leak detection system exceeds the action leakage rate, the owner or operator must submit to the director a report summarizing the results of any remedial actions taken and actions planned.

(c) To make the leak and/or remediation determinations in paragraphs (b)(3), (b)(4), and (b)(5), the owner or operator must:

§11-264-304

- (1)
 - (i) Assess the source of liquids and amounts of liquids by source,
 - (ii) Conduct a fingerprint, hazardous constituent, or other analyses of the liquids in the leak detection system to identify the source of liquids and possible location of any leaks, and the hazard and mobility of the liquid; and
 - (iii) Assess the seriousness of any leaks in terms of potential for escaping into the environment; or
- (2) Document why such assessments are not needed. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.304)

§11-264-305 -- §11-264-308 [Reserved]

§11-264-309 Surveying and recordkeeping. The owner or operator of a landfill must maintain the following items in the operating record required under section 11-264-73:

- (a) On a map, the exact location and dimensions, including depth, of each cell with respect to permanently surveyed benchmarks; and
- (b) The contents of each cell and the approximate location of each hazardous waste type within each cell. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.309)

§11-264-310 Closure and post-closure care. (a) At final closure of the landfill or upon closure of any cell, the owner or operator must cover the landfill or cell with a final cover designed and constructed to:

- (1) Provide long-term minimization of migration of liquids through the closed landfill;
- (2) Function with minimum maintenance;
- (3) Promote drainage and minimize erosion or abrasion of the cover;
- (4) Accommodate settling and subsidence so that the cover's integrity is maintained; and
- (5) Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

(b) After final closure, the owner or operator must comply with all post-closure requirements contained in sections 11-264-117 through 11-264-120, including maintenance and monitoring throughout the post-closure care period (specified in the permit under section 11-264-117). The owner or operator must:

- (1) Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary

- to correct the effects of settling, subsidence, erosion, or other events;
- (2) Continue to operate the leachate collection and removal system until leachate is no longer detected;
 - (3) Maintain and monitor the leak detection system in accordance with subparagraph 11-264-301(c)(3)(iv) and paragraph 11-264-301(c)(4) and subsection 11-264-303(c), and comply with all other applicable leak detection system requirements of this chapter;
 - (4) Maintain and monitor the ground-water monitoring system and comply with all other applicable requirements of subchapter F;
 - (5) Prevent run-on and run-off from eroding or otherwise damaging the final cover; and
 - (6) Protect and maintain surveyed benchmarks used in complying with section 11-264-309. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.310)

§11-264-311 [Reserved]

§11-264-312 Special requirements for ignitable or reactive waste. (a) Except as provided in subsection (b), and in section 11-264-316, ignitable or reactive waste must not be placed in a landfill, unless the waste and landfill meet all applicable requirements of chapter 11-268, and:

- (1) The resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under section 11-261-21 or section 11-261-23; and
- (2) Subsection 11-264-17(b) is complied with.

(b) Except for prohibited wastes which remain subject to treatment standards in subchapter D of chapter 11-268, ignitable wastes in containers may be landfilled without meeting the requirements of subsection (a), provided that the wastes are disposed of in such a way that they are protected from any material or conditions which may cause them to ignite. At a minimum, ignitable wastes must be disposed of in non-leaking containers which are carefully handled and placed so as to avoid heat, sparks, rupture, or any other condition that might cause ignition of the wastes; must be covered daily with soil or other non-combustible material to minimize the potential for ignition of the wastes; and must not be disposed of in cells that contain or will contain other wastes which may generate heat sufficient to cause ignition of the waste. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.312)

§11-264-312

§11-264-313 Special requirements for incompatible wastes.
Incompatible wastes, or incompatible wastes and materials, (see Appendix V for examples) must not be placed in the same landfill cell, unless subsection 11-264-17(b) is complied with. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.313)

§11-264-314 Special requirements for bulk and containerized liquids.

(a) [Reserved]

(b) The placement of bulk or non-containerized liquid hazardous waste or hazardous waste containing free liquids (whether or not sorbents have been added) in any landfill is prohibited.

(c) To demonstrate the absence or presence of free liquids in either a containerized or a bulk waste, the following test must be used: Method 9095 (Paint Filter Liquids Test) as described in ``Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,' ' EPA Publication SW-846, as incorporated by reference in section 11-260-11.

(d) Containers holding free liquids must not be placed in a landfill unless:

- (1) All free-standing liquid: (i) has been removed by decanting, or other methods; (ii) has been mixed with sorbent or solidified so that free-standing liquid is no longer observed; or (iii) has been otherwise eliminated; or
- (2) The container is very small, such as an ampule; or
- (3) The container is designed to hold free liquids for use other than storage, such as a battery or capacitor; or
- (4) The container is a lab pack as defined in section 11-264-316 and is disposed of in accordance with section 11-264-316.

(e) Sorbents used to treat free liquids to be disposed of in landfills must be nonbiodegradable. Nonbiodegradable sorbents are: materials listed or described in paragraph (e)(1) of this section; materials that pass one of the tests in paragraph (e)(2) of this section; or materials that are determined by the EPA to be nonbiodegradable through the 40 CFR Part 260 petition process.

(1) Nonbiodegradable sorbents.

- (i) Inorganic minerals, other inorganic materials, and elemental carbon (e.g., aluminosilicates, clays, smectites, Fuller's earth, bentonite, calcium bentonite, montmorillonite, calcined montmorillonite, kaolinite, micas (illite), vermiculites, zeolites; calcium carbonate (organic free limestone); oxides/hydroxides, alumina, lime, silica (sand), diatomaceous earth; perlite (volcanic glass); expanded volcanic rock; volcanic

- ash; cement kiln dust; fly ash; rice hull ash; activated charcoal/activated carbon); or
- (ii) High molecular weight synthetic polymers (e.g., polyethylene, high density polyethylene (HDPE), polypropylene, polystyrene, polyurethane, polyacrylate, polynorborene, polyisobutylene, ground synthetic rubber, cross-linked allylstyrene and tertiary butyl copolymers). This does not include polymers derived from biological material or polymers specifically designed to be degradable; or
- (iii) Mixtures of these nonbiodegradable materials.
- (2) Tests for nonbiodegradable sorbents.
 - (i) The sorbent material is determined to be nonbiodegradable under ASTM Method G21-70 (1984a)-Standard Practice for Determining Resistance of Synthetic Polymer Materials to Fungi; or
 - (ii) The sorbent material is determined to be nonbiodegradable under ASTM Method G22-76 (1984b)-Standard Practice for Determining Resistance of Plastics to Bacteria; or
 - (iii) The sorbent material is determined to be non-biodegradable under OECD test 301B: [CO₂ Evolution (Modified Sturm Test)].
- (f) Effective November 8, 1985, the placement of any liquid which is not a hazardous waste in a landfill is prohibited unless the owner or operator of such landfill demonstrates to the director, or the director determines, that:
 - (1) The only reasonably available alternative to the placement in such landfill is placement in a landfill or unlined surface impoundment, whether or not permitted or operating under interim status, which contains, or may reasonably be anticipated to contain, hazardous waste; and
 - (2) Placement in such owner or operator's landfill will not present a risk of contamination of any underground source of drinking water (as that term is defined in 40 CFR 144.3.(1998)) [Eff 6/18/94; am 3/13/99; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.314)

§11-264-315 Special requirements for containers. Unless they are very small, such as an ampule, containers must be either:

- (a) At least ninety percent full when placed in the landfill; or
- (b) Crushed, shredded, or similarly reduced in volume to the maximum practical extent before burial in the landfill. [Eff 6/18/94; comp](Auth:

HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40
C.F.R. §264.315)

§11-264-316 Disposal of small containers of hazardous waste in overpacked drums (lab packs). Small containers of hazardous waste in overpacked drums (lab packs) may be placed in a landfill if the following requirements are met:

- (a) Hazardous waste must be packaged in non-leaking inside containers. The inside containers must be of a design and constructed of a material that will not react dangerously with, be decomposed by, or be ignited by the contained waste. Inside containers must be tightly and securely sealed. The inside containers must be of the size and type specified in the U.S. Department of Transportation (DOT) hazardous materials regulations (49 CFR parts 173, 178, and 179), if those regulations specify a particular inside container for the waste.
- (b) The inside containers must be overpacked in an open head DOT-specification metal shipping container (49 CFR Parts 178 and 179) of no more than 416-liter (110 gallon) capacity and surrounded by, at a minimum, a sufficient quantity of sorbent material, determined to be nonbiodegradable in accordance with subsection 11-264-314(e), to completely sorb all of the liquid contents of the inside containers. The metal outer container must be full after it has been packed with inside containers and sorbent material.
- (c) The sorbent material used must not be capable of reacting dangerously with, being decomposed by, or being ignited by the contents of the inside containers, in accordance with subsection 11-264-17(b).
- (d) Incompatible wastes, as defined in section 11-260-10, must not be placed in the same outside container.
- (e) Reactive wastes, other than cyanide- or sulfide-bearing waste as defined in paragraph 11-261-23(a)(5), must be treated or rendered non-reactive prior to packaging in accordance with subsections (a) through (d). Cyanide- and sulfide-bearing reactive waste may be packed in accordance with subsections (a) through (d) without first being treated or rendered non-reactive.
- (f) Such disposal is in compliance with the requirements of chapter 11-268. Persons who incinerate lab packs according to the requirements in paragraph 11-268-42(c)(1) may use fiber drums in place of metal outer containers. Such fiber drums must meet the DOT specifications in 49 CFR 173.12 and be overpacked according to the requirements in subsection (b). [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.316)

§11-264-317 Special requirements for hazardous wastes F020, F021, F022, F023, F026, and F027. (a) Hazardous Wastes F020, F021, F022, F023, F026, and F027 must not be placed in any landfill unless the owner or operator operates the landfill in accord with a management plan for these wastes that is approved by the director pursuant to the standards set out in this subsection, and in accord with all other applicable requirements of this chapter. The factors to be considered are:

- (1) The volume, physical, and chemical characteristics of the wastes, including their potential to migrate through the soil or to volatilize or escape into the atmosphere;
- (2) The attenuative properties of underlying and surrounding soils or other materials;
- (3) The mobilizing properties of other materials co-disposed with these wastes; and
- (4) The effectiveness of additional treatment, design, or monitoring requirements.

(b) The director may determine that additional design, operating, and monitoring requirements are necessary for landfills managing hazardous wastes F020, F021, F022, F023, F026, and F027 in order to reduce the possibility of migration of these wastes to ground water, surface water, or air so as to protect human health and the environment. [Eff 6/18/94; comp
](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35)
(Imp: 40 C.F.R. §264.317)

SUBCHAPTER O

INCINERATORS

§11-264-340 Applicability. (a) The rules of this subchapter apply to owners and operators of hazardous waste incinerators (as defined in section 11-260-10), except as section 11-264-1 provides otherwise.

(b) After consideration of the waste analysis included with Part B of the permit application, the director, in establishing the permit conditions, must exempt the applicant from all requirements of this subchapter except section 11-264-341 (Waste analysis) and section 11-264-351 (Closure),

- (1) If the director finds that the waste to be burned is:
 - (i) Listed as a hazardous waste in subchapter D of chapter 11-261, solely because it is ignitable (Hazard Code I), corrosive (Hazard Code C), or both; or
 - (ii) Listed as a hazardous waste in subchapter D of chapter 11-261, solely because it is reactive (Hazard Code R) for characteristics other than

- those listed in paragraphs 11-261-23(a)(4) and (5), and will not be burned when other hazardous wastes are present in the combustion zone; or
- (iii) A hazardous waste solely because it possesses the characteristic of ignitability, corrosivity, or both, as determined by the test for characteristics of hazardous wastes under subchapter C of chapter 11-261; or
 - (iv) A hazardous waste solely because it possesses any of the reactivity characteristics described by paragraphs 11-261-23(a)(1), (2), (3), (6), (7), and (8), and will not be burned when other hazardous wastes are present in the combustion zone; and
- (2) If the waste analysis shows that the waste contains none of the hazardous constituents listed in Appendix VIII of chapter 11-261, which would reasonably be expected to be in the waste.
- (c) If the waste to be burned is one which is described by subparagraphs (b)(1)(i), (ii), (iii), or (iv) and contains insignificant concentrations of the hazardous constituents listed in Appendix VIII of chapter 11-261, then the director may, in establishing permit conditions, exempt the applicant from all requirements of this subchapter, except section 11-264-341 (Waste analysis) and section 11-264-351 (Closure), after consideration of the waste analysis included with Part B of the permit application, unless the director finds that the waste will pose a threat to human health and the environment when burned in an incinerator.
- (d) The owner or operator of an incinerator may conduct trial burns subject only to the requirements of section 11-270-62 (Short term and incinerator permits). [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.340)

§11-264-341 Waste analysis. (a) As a portion of the trial burn plan required by section 11-270-62, or with Part B of the permit application, the owner or operator must have included an analysis of the waste feed sufficient to provide all information required by subsection 11-270-62(b) or section 11-270-19. Owners or operators of new hazardous waste incinerators must provide the information required by subsection 11-270-62(c) or section 11-270-19 to the greatest extent possible.

(b) Throughout normal operation the owner or operator must conduct sufficient waste analysis to verify that waste feed to the incinerator is within the physical and chemical composition limits specified in his permit (under subsection 11-264-345(b)). [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.341)

§11-264-342 Principal organic hazardous constituents (POHCs). (a) Principal Organic Hazardous Constituents (POHCs) in the waste feed must be treated to the extent required by the performance standard of section 11-264-343.

(b)(1) One or more POHCs will be specified in the facility's permit, from among those constituents listed in Appendix VIII of chapter 11-261, for each waste feed to be burned. This specification will be based on the degree of difficulty of incineration of the organic constituents in the waste and on their concentration or mass in the waste feed, considering the results of waste analyses and trial burns or alternative data submitted with Part B of the facility's permit application. Organic constituents which represent the greatest degree of difficulty of incineration will be those most likely to be designated as POHCs. Constituents are more likely to be designated as POHCs if they are present in large quantities or concentrations in the waste.

(2) Trial POHCs will be designated for performance of trial burns in accordance with the procedure specified in section 11-270-62 for obtaining trial burn permits.
[Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.342)

§11-264-343 Performance standards. An incinerator burning hazardous waste must be designed, constructed, and maintained so that, when operated in accordance with operating requirements specified under section 11-264-345, it will meet the following performance standards:

(a)(1) Except as provided in paragraph (a)(2), an incinerator burning hazardous waste must achieve a destruction and removal efficiency (DRE) of 99.99% for each principal organic hazardous constituent (POHC) designated (under section 11-264-342) in its permit for each waste feed. DRE is determined for each POHC from the following equation:

$$\text{DRE} = \frac{(W_{\text{in}} - W_{\text{out}})}{W_{\text{in}}} \times 100\%$$

where:

W_{in} = mass feed rate of one principal organic hazardous constituent (POHC) in the waste stream feeding the incinerator

and

W_{out} =mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere.

- (2) An incinerator burning hazardous wastes F020, F021, F022, F023, F026, or F027 must achieve a destruction and removal efficiency (DRE) of 99.9999% for each principal organic hazardous constituent (POHC) designated (under section 11-264-342) in its permit. This performance must be demonstrated on POHCs that are more difficult to incinerate than tetra-, penta-, and hexachlorodibenzo-p-dioxins and dibenzofurans. DRE is determined for each POHC from the equation in paragraph 11-264-343(a)(1). In addition, the owner or operator of the incinerator must notify the director of his intent to incinerate hazardous wastes F020, F021, F022, F023, F026, or F027.

(b) An incinerator burning hazardous waste and producing stack emissions of more than 1.8 kilograms per hour (4 pounds per hour) of hydrogen chloride (HCl) must control HCl emissions such that the rate of emission is no greater than the larger of either 1.8 kilograms per hour or 1% of the HCl in the stack gas prior to entering any pollution control equipment.

(c) An incinerator burning hazardous waste must not emit particulate matter in excess of 180 milligrams per dry standard cubic meter (0.08 grains per dry standard cubic foot) when corrected for the amount of oxygen in the stack gas according to the formula:

$$P_c = P_m \times \frac{14}{21 - Y}$$

Where P_c is the corrected concentration of particulate matter, P_m is the measured concentration of particulate matter, and Y is the measured concentration of oxygen in the stack gas, using the Orsat method for oxygen analysis of dry flue gas, presented in 40 CFR part 60, Appendix A (Method 3). This correction procedure is to be used by all hazardous waste incinerators except those operating under conditions of oxygen enrichment. For these facilities, the director will select an appropriate correction procedure, to be specified in the facility permit.

(d) For purposes of permit enforcement, compliance with the operating requirements specified in the permit (under section 11-264-345) will be regarded as compliance with this section. However, evidence that compliance with those permit conditions is insufficient to ensure compliance with the performance requirements of this section may be ``information'' justifying

modification, revocation, or reissuance of a permit under section 11-270-41. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.343)

§11-264-344 Hazardous waste incinerator permits. (a) The owner or operator of a hazardous waste incinerator may burn only wastes specified in his permit and only under operating conditions specified for those wastes under section 11-264-345, except:

(1) In approved trial burns under section 11-270-62; or
 (2) Under exemptions created by section 11-264-340.
 (b) Other hazardous wastes may be burned only after operating conditions have been specified in a new permit or a permit modification as applicable. Operating requirements for new wastes may be based on either trial burn results or alternative data included with Part B of a permit application under section 11-270-19.

(c) The permit for a new hazardous waste incinerator must establish appropriate conditions for each of the applicable requirements of this subchapter, including but not limited to allowable waste feeds and operating conditions necessary to meet the requirements of section 11-264-345, sufficient to comply with the following standards:

- (1) For the period beginning with initial introduction of hazardous waste to the incinerator and ending with initiation of the trial burn, and only for the minimum time required to establish operating conditions required in paragraph (c)(2), not to exceed a duration of 720 hours operating time for treatment of hazardous waste, the operating requirements must be those most likely to ensure compliance with the performance standards of section 11-264-343, based on the director's engineering judgment. The director may extend the duration of this period once for up to 720 additional hours when good cause for the extension is demonstrated by the applicant.
- (2) For the duration of the trial burn, the operating requirements must be sufficient to demonstrate compliance with the performance standards of section 11-264-343 and must be in accordance with the approved trial burn plan;
- (3) For the period immediately following completion of the trial burn, and only for the minimum period sufficient to allow sample analysis, data computation, and submission of the trial burn results by the applicant, and review of the trial burn results and modification of the facility permit by the director, the operating requirements must be those most likely to ensure compliance with the performance standards of section

11-264-343, based on the director's engineering judgement.

- (4) For the remaining duration of the permit, the operating requirements must be those demonstrated, in a trial burn or by alternative data specified in subsection 11-270-19(c), as sufficient to ensure compliance with the performance standards of section 11-264-343. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.344)

§11-264-345 Operating requirements. (a) An incinerator must be operated in accordance with operating requirements specified in the permit. These will be specified on a case-by-case basis as those demonstrated (in a trial burn or in alternative data as specified in subsection 11-264-344(b) and included with Part B of a facility's permit application) to be sufficient to comply with the performance standards of section 11-264-343.

(b) Each set of operating requirements will specify the composition of the waste feed (including acceptable variations in the physical or chemical properties of the waste feed which will not affect compliance with the performance requirement of section 11-264-343) to which the operating requirements apply. For each such waste feed, the permit will specify acceptable operating limits including the following conditions:

- (1) Carbon monoxide (CO) level in the stack exhaust gas;
- (2) Waste feed rate;
- (3) Combustion temperature;
- (4) An appropriate indicator of combustion gas velocity;
- (5) Allowable variations in incinerator system design or operating procedures; and
- (6) Such other operating requirements as are necessary to ensure that the performance standards of section 11-264-343 are met.

(c) During start-up and shut-down of an incinerator, hazardous waste (except wastes exempted in accordance with section 11-264-340) must not be fed into the incinerator unless the incinerator is operating within the conditions of operation (temperature, air feed rate, etc.) specified in the permit.

(d) Fugitive emissions from the combustion zone must be controlled by:

- (1) Keeping the combustion zone totally sealed against fugitive emissions; or
- (2) Maintaining a combustion zone pressure lower than atmospheric pressure; or
- (3) An alternate means of control demonstrated (with Part B of the permit application) to provide fugitive emissions control equivalent to maintenance of

combustion zone pressure lower than atmospheric pressure.

(e) An incinerator must be operated with a functioning system to automatically cut off waste feed to the incinerator when operating conditions deviate from limits established under subsection (a).

(f) An incinerator must cease operation when changes in waste feed, incinerator design, or operating conditions exceed limits designated in its permit. [Eff 6/18/94; comp
(Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35)
(Imp: 40 C.F.R. §264.345)]

§11-264-346 [Reserved]

§11-264-347 Monitoring and inspections. (a) The owner or operator must conduct, as a minimum, the following monitoring while incinerating hazardous waste:

- (1) Combustion temperature, waste feed rate, and the indicator of combustion gas velocity specified in the facility permit must be monitored on a continuous basis.
- (2) CO must be monitored on a continuous basis at a point in the incinerator downstream of the combustion zone and prior to release to the atmosphere.
- (3) Upon request by the director, sampling and analysis of the waste and exhaust emissions must be conducted to verify that the operating requirements established in the permit achieve the performance standards of section 11-264-343.

(b) The incinerator and associated equipment (pumps, valves, conveyors, pipes, etc.) must be subjected to thorough visual inspection, at least daily, for leaks, spills, fugitive emissions, and signs of tampering.

(c) The emergency waste feed cutoff system and associated alarms must be tested at least weekly to verify operability, unless the applicant demonstrates to the director that weekly inspections will unduly restrict or upset operations and that less frequent inspection will be adequate. At a minimum, operational testing must be conducted at least monthly.

(d) This monitoring and inspection data must be recorded and the records must be placed in the operating log required by section 11-264-73. [Eff 6/18/94; comp
(Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.347)]

§11-264-348 -- §11-264-350 [Reserved]

§11-264-347

§11-264-351 Closure. At closure the owner or operator must remove all hazardous waste and hazardous waste residues (including, but not limited to, ash, scrubber waters, and scrubber sludges) from the incinerator site. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.351)

SUBCHAPTERS P - R

[RESERVED]

SUBCHAPTER S

CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

§11-264-552 Corrective Action Management Units (CAMU).

(a) For the purpose of implementing remedies under section 11-264-101 or HRS section 342J-36, the director may designate an area at the facility as a corrective action management unit, as defined in section 11-260-10, in accordance with the requirements of this section. One or more CAMUs may be designated at a facility.

- (1) Placement of remediation wastes into or within a CAMU does not constitute land disposal of hazardous wastes.
- (2) Consolidation or placement of remediation wastes into or within a CAMU does not constitute creation of a unit subject to minimum technology requirements.

(b)(1) The director may designate a regulated unit (as defined in paragraph 11-264-90(a)(2)) as a CAMU, or may incorporate a regulated unit into a CAMU, if:

- (i) The regulated unit is closed or closing, meaning it has begun the closure process under section 11-264-113 or 11-265-113; and
- (ii) Inclusion of the regulated unit will enhance implementation of effective, protective and reliable remedial actions for the facility.

(2) The subchapter F, G, and H requirements and the unit-specific requirements of chapter 11-264 or 11-265 that applied to that regulated unit will continue to apply to that portion of the CAMU after incorporation into the CAMU.

(c) The director shall designate a CAMU in accordance with the following:

- (1) The CAMU shall facilitate the implementation of reliable, effective, protective, and cost-effective remedies;
- (2) Waste management activities associated with the CAMU shall not create unacceptable risks to humans or to the

environment resulting from exposure to hazardous wastes or hazardous constituents;

- (3) The CAMU shall include uncontaminated areas of the facility, only if including such areas for the purpose of managing remediation waste is more protective than management of such wastes at contaminated areas of the facility;
- (4) Areas within the CAMU, where wastes remain in place after closure of the CAMU, shall be managed and contained so as to minimize future releases, to the extent practicable;
- (5) The CAMU shall expedite the timing of remedial activity implementation, when appropriate and practicable;
- (6) The CAMU shall enable the use, when appropriate, of treatment technologies (including innovative technologies) to enhance the long-term effectiveness of remedial actions by reducing the toxicity, mobility, or volume of wastes that will remain in place after closure of the CAMU; and
- (7) The CAMU shall, to the extent practicable, minimize the land area of the facility upon which wastes will remain in place after closure of the CAMU.

(d) The owner/operator shall provide sufficient information to enable the director to designate a CAMU in accordance with the criteria in section 11-264-552.

(e) The director shall specify, in the permit or order, requirements for CAMUs to include the following:

- (1) The areal configuration of the CAMU.
- (2) Requirements for remediation waste management to include the specification of applicable design, operation and closure requirements.
- (3) Requirements for ground water monitoring that are sufficient to:
 - (i) Continue to detect and to characterize the nature, extent, concentration, direction, and movement of existing releases of hazardous constituents in ground water from sources located within the CAMU; and
 - (ii) Detect and subsequently characterize releases of hazardous constituents to ground water that may occur from areas of the CAMU in which wastes will remain in place after closure of the CAMU.

(4) Closure and post-closure requirements.

- (i) Closure of corrective action management units shall:
 - (A) Minimize the need for further maintenance; and
 - (B) Control, minimize, or eliminate, to the extent necessary to protect human health and the environment, for areas where wastes

- remain in place, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, to surface waters, or to the atmosphere.
 - (ii) Requirements for closure of CAMUs shall include the following, as appropriate and as deemed necessary by the director for a given CAMU:
 - (A) Requirements for excavation, removal, treatment or containment of wastes;
 - (B) For areas in which wastes will remain after closure of the CAMU, requirements for capping of such areas; and
 - (C) Requirements for removal and decontamination of equipment, devices, and structures used in remediation waste management activities within the CAMU.
 - (iii) In establishing specific closure requirements for CAMUs under subsection 11-264-552(e), the director shall consider the following factors:
 - (A) CAMU characteristics;
 - (B) Volume of wastes which remain in place after closure;
 - (C) Potential for releases from the CAMU;
 - (D) Physical and chemical characteristics of the waste;
 - (E) Hydrogeological and other relevant environmental conditions at the facility which may influence the migration of any potential or actual releases; and
 - (F) Potential for exposure of humans and environmental receptors if releases were to occur from the CAMU.
 - (iv) Post-closure requirements as necessary to protect human health and the environment, to include, for areas where wastes will remain in place, monitoring and maintenance activities, and the frequency with which such activities shall be performed to ensure the integrity of any cap, final cover, or other containment system.
- (f) The director shall document the rationale for designating CAMUs and shall make such documentation available to the public.
- (g) Incorporation of a CAMU into an existing permit must be approved by the director according to the procedures for department-initiated permit modifications under section 11-270-41, or according to the permit modification procedures of section 11-270-42.
- (h) The designation of a CAMU does not change the department's existing authority to address clean-up levels,

media-specific points of compliance to be applied to remediation at a facility, or other remedy selection decisions. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.552)

§11-264-553 Temporary Units (TU). (a) For temporary tanks and container storage areas used for treatment or storage of hazardous remediation wastes, during remedial activities required under section 11-264-101 or HRS section 342J-36, the director may determine that a design, operating, or closure standard applicable to such units may be replaced by alternative requirements which are protective of human health and the environment.

(b) Any temporary unit to which alternative requirements are applied in accordance with subsection (a) shall be:

- (1) Located within the facility boundary; and
- (2) Used only for treatment or storage of remediation wastes.

(c) In establishing standards to be applied to a temporary unit, the director shall consider the following factors:

- (1) Length of time such unit will be in operation;
- (2) Type of unit;
- (3) Volumes of wastes to be managed;
- (4) Physical and chemical characteristics of the wastes to be managed in the unit;
- (5) Potential for releases from the unit;
- (6) Hydrogeological and other relevant environmental conditions at the facility which may influence the migration of any potential releases; and
- (7) Potential for exposure of humans and environmental receptors if releases were to occur from the unit.

(d) The director shall specify in the permit or order the length of time a temporary unit will be allowed to operate, to be no longer than a period of one year. The director shall also specify the design, operating, and closure requirements for the unit.

(e) The director may extend the operational period of a temporary unit once for no longer than a period of one year beyond that originally specified in the permit or order, if the director determines that:

- (1) Continued operation of the unit will not pose a threat to human health and the environment; and
- (2) Continued operation of the unit is necessary to ensure timely and efficient implementation of remedial actions at the facility.

(f) Incorporation of a temporary unit or a time extension for a temporary unit into an existing permit shall be:

§11-264-553

- (1) Approved in accordance with the procedures for department-initiated permit modifications under section 11-270-41; or
- (2) Requested by the owner/operator as a Class II modification according to the procedures under section 11-270-42.

(g) The director shall document the rationale for designating a temporary unit and for granting time extensions for temporary units and shall make such documentation available to the public. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.553)

SUBCHAPTERS T - V

[RESERVED]

SUBCHAPTER W

DRIP PADS

§11-264-570 Applicability. (a) The requirements of this subchapter apply to owners and operators of facilities that use new or existing drip pads to convey treated wood drippage, precipitation, and/or surface water run-off to an associated collection system. Existing drip pads are those constructed before December 6, 1990 and those for which the owner or operator has a design and has entered into binding financial or other agreements for construction prior to December 6, 1990. All other drip pads are new drip pads. The requirement at paragraph 11-264-573(b)(3) to install a leak collection system applies only to those drip pads that are constructed after December 24, 1992 except for those constructed after December 24, 1992 for which the owner or operator has a design and has entered into binding financial or other agreements for construction prior to December 24, 1992.

(b) The owner or operator of any drip pad that is inside or under a structure that provides protection from precipitation so that neither run-off nor run-on is generated is not subject to regulation under subsection 11-264-573(e) or subsection 11-264-573(f), as appropriate.

(c) The requirements of this subchapter are not applicable to the management of infrequent and incidental drippage in storage yards provided that:

- (1) The owner or operator maintains and complies with a written contingency plan that describes how the owner or operator will respond immediately to the discharge of such infrequent and incidental drippage. At a

- minimum, the contingency plan must describe how the owner or operator will do the following:
- (i) Clean up the drippage;
 - (ii) Document the cleanup of the drippage;
 - (iii) Retain documents regarding cleanup for three years; and
 - (iv) Manage the contaminated media in a manner consistent with State regulations. [Eff 6/18/94; comp](Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.570)

§11-264-571 Assessment of existing drip pad integrity. (a) For each existing drip pad as defined in section 11-264-570, the owner or operator must evaluate the drip pad and determine that it meets all of the requirements of this subchapter, except the requirements for liners and leak detection systems of subsection 11-264-573(b). No later than the effective date of this rule, the owner or operator must obtain and keep on file at the facility a written assessment of the drip pad, reviewed and certified by an independent, qualified registered professional engineer that attests to the results of the evaluation. The assessment must be reviewed, updated and re-certified annually until all upgrades, repairs, or modifications necessary to achieve compliance with all of the standards of section 11-264-573 are complete. The evaluation must document the extent to which the drip pad meets each of the design and operating standards of section 11-264-573, except the standards for liners and leak detection systems, specified in subsection 11-264-573(b).

(b) The owner or operator must develop a written plan for upgrading, repairing, and modifying the drip pad to meet the requirements of subsection 11-264-573(b), and submit the plan to the director no later than two years before the date that all repairs, upgrades, and modifications are complete. This written plan must describe all changes to be made to the drip pad in sufficient detail to document compliance with all the requirements of section 11-264-573. The plan must be reviewed and certified by an independent qualified registered professional engineer.

(c) Upon completion of all upgrades, repairs, and modifications, the owner or operator must submit to the director, the as-built drawings for the drip pad together with a certification by an independent qualified registered professional engineer attesting that the drip pad conforms to the drawings.

(d) If the drip pad is found to be leaking or unfit for use, the owner or operator must comply with the provisions of subsection 11-264-573(m) or close the drip pad in accordance with section 11-264-575. [Eff 6/18/94; comp](Auth:

§11-264-571

HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.571)

§11-264-572 Design and installation of new drip pads.
Owners and operators of new drip pads must ensure that the pads are designed, installed, and operated in accordance with one of the following:

- (a) all of the requirements of sections 11-264-573 (except paragraph 11-264-573(a)(4)), 11-264-574 and 11-264-575, or
- (b) all of the requirements of sections 11-264-573 (except subsection 11-264-573(b)), 11-264-574 and 11-264-575.
[Eff 6/28/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264-572)

§11-264-573 Design and operating requirements. (a) Drip pads must:

- (1) Be constructed of non-earthen materials, excluding wood and non-structurally supported asphalt;
- (2) Be sloped to free-drain treated wood drippage, rain and other waters, or solutions of drippage and water or other wastes to the associated collection system;
- (3) Have a curb or berm around the perimeter;
- (4) (i) Have a hydraulic conductivity of less than or equal to 1×10^{-7} centimeters per second, e.g., existing concrete drip pads must be sealed, coated, or covered with a surface material with a hydraulic conductivity of less than or equal to 1×10^{-7} centimeters per second such that the entire surface where drippage occurs or may run across is capable of containing such drippage and mixtures of drippage and precipitation, materials, or other wastes while being routed to an associated collection system. This surface material must be maintained free of cracks and gaps that could adversely affect its hydraulic conductivity, and the material must be chemically compatible with the preservatives that contact the drip pad. The requirements of this provision apply only to existing drip pads and those drip pads for which the owner or operator elects to comply with subsection 11-264-572(b) instead of subsection 11-264-572(a).
- (ii) The owner or operator must obtain and keep on file at the facility a written assessment of the drip pad, reviewed and certified by an independent, qualified registered professional engineer that attests to the results of the evaluation. The assessment must be reviewed, updated and

recertified annually. The evaluation must document the extent to which the drip pad meets the design and operating standards of this section, except for subsection (b).

- (5) Be of sufficient structural strength and thickness to prevent failure due to physical contact, climatic conditions, and the stress of daily operations, e.g., variable and moving loads such as vehicle traffic, movement of wood, etc.

(b) If an owner/operator elects to comply with subsection 11-264-572(a) instead of subsection 11-264-572(b), the drip pad must have:

- (1) A synthetic liner installed below the drip pad that is designed, constructed, and installed to prevent leakage from the drip pad into the adjacent subsurface soil or groundwater or surface water at any time during the active life (including the closure period) of the drip pad. The liner must be constructed of materials that will prevent waste from being absorbed into the liner and to prevent releases into the adjacent subsurface soil or groundwater or surface water during the active life of the facility. The liner must be:

- (i) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or drip pad leakage to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation (including stresses from vehicular traffic on the drip pad);
- (ii) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression or uplift; and
- (iii) Installed to cover all surrounding earth that could come in contact with the waste or leakage; and

- (2) A leakage detection system immediately above the liner that is designed, constructed, maintained and operated to detect leakage from the drip pad. The leakage detection system must be:

- (i) Constructed of materials that are:
 - (A) Chemically resistant to the waste managed in the drip pad and the leakage that might be generated; and
 - (B) Of sufficient strength and thickness to prevent collapse under the pressures exerted

- by overlaying materials and by any equipment used at the drip pad;
- (ii) Designed and operated to function without clogging through the scheduled closure of the drip pad; and
 - (iii) Designed so that it will detect the failure of the drip pad or the presence of a release of hazardous waste or accumulated liquid at the earliest practicable time.
- (3) A leakage collection system immediately above the liner that is designed, constructed, maintained and operated to collect leakage from the drip pad such that it can be removed from below the drip pad. The date, time, and quantity of any leakage collected in this system and removed must be documented in the operating log.
- (c) Drip pads must be maintained such that they remain free of cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the drip pad.
- (d) The drip pad and associated collection system must be designed and operated to convey, drain, and collect liquid resulting from drippage or precipitation in order to prevent run-off.
- (e) Unless protected by a structure, as described in subsection 11-264-570(b), the owner or operator must design, construct, operate and maintain a run-on control system capable of preventing flow onto the drip pad during peak discharge from at least a twenty-four hour, twenty-five year storm, unless the system has sufficient excess capacity to contain any run-off that might enter the system.
- (f) Unless protected by a structure or cover as described in subsection 11-264-570(b), the owner or operator must design, construct, operate and maintain a run-off management system to collect and control at least the water volume resulting from a twenty-four hour, twenty-five year storm.
- (g) The drip pad must be evaluated to determine that it meets the requirements of subsections (a) through (f) and the owner or operator must obtain a statement from an independent, qualified registered professional engineer certifying that the drip pad design meets the requirements of this section.
- (h) Drippage and accumulated precipitation must be removed from the associated collection system as necessary to prevent overflow onto the drip pad.
- (i) The drip pad surface must be cleaned thoroughly in a manner and frequency such that accumulated residues of hazardous waste or other materials are removed, with residues being properly managed as hazardous waste, so as to allow weekly inspections of the entire drip pad surface without interference or hindrance from accumulated residues of hazardous waste or other materials on the drip pad. The owner or operator must document the date and time of each cleaning and the cleaning procedure used in the facility's operating log. The

owner/operator must determine if the residues are hazardous as per section 11-262-11 and, if so, must manage them under chapters 11-261 through 11-268, 11-270, and HRS section 342J-6.5.

(j) Drip pads must be operated and maintained in a manner to minimize tracking of hazardous waste or hazardous waste constituents off the drip pad as a result of activities by personnel or equipment.

(k) After being removed from the treatment vessel, treated wood from pressure and non-pressure processes must be held on the drip pad until drippage has ceased. The owner or operator must maintain records sufficient to document that all treated wood is held on the pad following treatment in accordance with this requirement.

(l) Collection and holding units associated with run-on and run-off control systems must be emptied or otherwise managed as soon as possible after storms to maintain design capacity of the system.

(m) Throughout the active life of the drip pad and as specified in the permit, if the owner or operator detects a condition that may have caused or has caused a release of hazardous waste, the condition must be repaired within a reasonably prompt period of time following discovery, in accordance with the following procedures:

- (1) Upon detection of a condition that may have caused or has caused a release of hazardous waste (e.g., upon detection of leakage in the leak detection system), the owner or operator must:
 - (i) Enter a record of the discovery in the facility operating log;
 - (ii) Immediately remove the portion of the drip pad affected by the condition from service;
 - (iii) Determine what steps must be taken to repair the drip pad and clean up any leakage from below the drip pad, and establish a schedule for accomplishing the repairs;
 - (iv) Within twenty-four hours after discovery of the condition, notify the director of the condition and, within ten working days, provide written notice to the director with a description of the steps that will be taken to repair the drip pad and clean up any leakage, and the schedule for accomplishing this work.
- (2) The director will review the information submitted, make a determination regarding whether the pad must be removed from service completely or partially until repairs and clean up are complete, and notify the owner or operator of the determination and the underlying rationale in writing.
- (3) Upon completing all repairs and clean up, the owner or operator must notify the director in writing and

provide a certification signed by an independent, qualified registered professional engineer, that the repairs and clean up have been completed according to the written plan submitted in accordance with subparagraph (m)(1)(iv).

(n) Should a permit be necessary, the director will specify in the permit all design and operating practices that are necessary to ensure that the requirements of this section are satisfied.

(o) The owner or operator must maintain, as part of the facility operating log, documentation of past operating and waste handling practices. This must include identification of preservative formulations used in the past, a description of drip management practices, and a description of treated wood storage and handling practices. [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.573)

§11-264-574 Inspections. (a) During construction or installation, liners and cover systems (e.g., membranes, sheets, or coatings) must be inspected for uniformity, damage and imperfections (e.g., holes, cracks, thin spots, or foreign materials). Immediately after construction or installation, liners must be inspected and certified as meeting the requirements of section 11-264-573 by an independent qualified, registered professional engineer. This certification must be maintained at the facility as part of the facility operating record. After installation, liners and covers must be inspected to ensure tight seams and joints and the absence of tears, punctures, or blisters.

(b) While a drip pad is in operation, it must be inspected weekly and after storms to detect evidence of any of the following:

- (1) Deterioration, malfunctions or improper operation of run-on and run-off control systems;
 - (2) The presence of leakage in and proper functioning of leak detection system;
 - (3) Deterioration or cracking of the drip pad surface.
- [Eff 6/18/94; comp] (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.574)

§11-264-575 Closure. (a) At closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (pad, liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leakage, and manage them as hazardous waste.

(b) If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment as required in subsection (a), the owner or operator finds that not all contaminated subsoils can be practicably removed or decontaminated, he must close the facility and perform post-closure care in accordance with closure and post-closure care requirements that apply to landfills (section 11-264-310). For permitted units, the requirement to have a permit continues throughout the post-closure period. In addition, for the purpose of closure, post-closure, and financial responsibility, such a drip pad is then considered to be a landfill, and the owner or operator must meet all of the requirements for landfills specified in subchapters G and H of this chapter.

(c)(1) The owner or operator of an existing drip pad, as defined in section 11-264-570, that does not comply with the liner requirements of paragraph 11-264-573(b)(1) must:

- (i) Include in the closure plan for the drip pad under section 11-264-112 both a plan for complying with subsection (a) and a contingent plan for complying with subsection (b) in case not all contaminated subsoils can be practicably removed at closure; and
- (ii) Prepare a contingent post-closure plan under section 11-264-118 for complying with subsection (b) in case not all contaminated subsoils can be practicably removed at closure.

(2) The cost estimates calculated under sections 11-264-112 and 11-264-144 for closure and post-closure care of a drip pad subject to this subsection must include the cost of complying with the contingent closure plan and the contingent post-closure plan, but are not required to include the cost of expected closure under subsection (a). [Eff 6/18/94; comp]
 (Auth: HRS §§342J-4, 342J-31, 342J-34, 342J-35) (Imp: 40 C.F.R. §264.575)